NORTHEAST MARKETING ISSUE
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Ammonia Meeting Program Includes Top Speakers

Institute's Eighth Annual Meeting Scheduled to Be In Chicago December 3-5

CHICAGO—The Agricultural Ammonia Institute will hold its eighth annual convention at the Morrison Hotel, Chicago, Dec. 3-5, with a complete program of speakers including agronomists, business leaders, representatives of the National Plant Food Institute and educators. In addition, a trade show by major producers of ammonia, manufacturers of equipment and allied materials will be featured as part of the convention.

Jack F. Criswell, Memphis, Tenn., executive secretary of the Institute, has announced the names of speakers scheduled to appear at various times on the program. These include Ed Lipscomb, director of sales promotion and public relations of the National Cotton Council and president of the International Public Relations Assn.; Dr. William A. Albrecht, head of the soils department of the University of Missouri, Columbia; Dr. Tom S. Hamilton, associate director of the experiment stations for the University of Illinois; Kenneth Cross of Schrock Fertilizer Co., Congerville, Ill., president of the Anhydrous Ammonia Assn. of Illinois; Joseph E. Burger, public relations director of H. V. Nootbaar & Co., Pasadena, Cal.,

(Turn to AMMONIA INSTITUTE, page 5)

Barter Program for Farm Products Is Changed by USDA

WASHINGTON—The U.S. Department of Agriculture has announced changes in the barter program through which surplus Commodity Credit Corp.-owned farm products are exchanged for strategic and other materials produced abroad. The changes will be effective immediately with respect to new barter offers. Provisions of previous programs will continue to apply to existing barter commitments only.

Under the modified program, barter contractors will no longer be required to obtain "certificates of additionality," but the modified barter program does include other measures to assure protection of the national interest of the United States, to safe-

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Farmers and New Ideas, Profits Take Spotlight At Ohio Solutions Event

By DONALD NETH and AMOS W. STANDISH
Croplife Staff

CINCINNATI—A presentation on how farmers accept new ideas, a panel discussion of equipment, inventory control and standardization as pathways to profits and a look at the changing economic society as a challenge to today's business leadership were the program highlights at a lively annual meeting of the National Fertilizer Solutions Assn. held here Nov. 16-18.

In addition to the formal program, conference rooms in which more than two dozen suppliers had on display the latest in materials and equipment gave the estimated 300 persons at the meeting a preview of things to come for this young and growing industry.

In his report to the members, Richard Cecil, Bartlett & O'Bryan Fertilizer Co., Owensboro, Ky., association president, stated that the organization had gained 8 new members during the past year. Mr. Cecil said that there were some 300 plants in the U.S. producing liquid fertilizer and that about 200 are members of the solutions group.

The presentation of farmer acceptance of new ideas was made by Dr. George M. Beal and Dr. Joseph Bohlen, Iowa State College. They gave the presentation all of the zip and precision of a Broadway opening—and twice the impact. Their flannelboard story, heard at several other fertilizer and pesticide industry meetings in the past several years, charted in a dramatic way the paths which new ideas and new products travel on their way to general acceptance by farmers.

The presentation was spiced with some frank comments about the distribution practices of the fertilizer industry.

A good dealer, they said, should know the product, should become active in his community affairs and should "program fertilizer, not just sell fertilizer."

The two processors said there was a vast amount of research work which showed that fertilizer was the top product for returning a profit to the farmer in terms of a dollar spent, and it was around this fact that dealers and salesmen should sell a fertilizer program.

In their flannelboard presentation, Dr. Beal and Dr. Bohlen said there were five stages in the mental process through which farmers accept new ideas or new products. These stages are:

(1) Awareness, when the farmer knows about the idea or product, but

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Wider Use of Fertilizers in California Seen by Speakers At Three-Day CFA Conference

LOS ANGELES—A full three-day convention featuring representatives of the fertilizer industry, the universities, and the entertainment industry comprised the 35th annual convention of the California Fertilizer Association here Nov. 9-11. Headquarters for the meeting was the Ambassador Hotel. Some 500 persons were in attendance, many coming from distant portions of the country.

Dr. R. L. Luckhardt, supervisor, agricultural technical service for Collier Carbon & Chemical Corp., Brea, Cal., in a discussion of the development of the liquid fertilizer business in California, said that growers now have a wider variety of products containing higher concentrations of nutrients than ever before. He added that along with these developments the corrosion problem has been reduced.

Other aspects of the same subject were covered by D. W. Galbraith, president, Agriform of Northern California, Inc., who pointed out that 38% of the nitrogen tonnage in California is now in solutions. He predicted that before long, ammonia will account for half of the nitrogen tonnage used in the state.

One of the keynotes of the convention was sounded by members of a panel headed by Dr. Daniel Aldrich, Jr., chairman of the department of soils and nutrition, University of California. Panel discussion on "Building for the Future" encompassed many of the economic and technical potentials for agriculture in the state, emphasizing the role of plant nutrients in accomplishing these ends.

J. Earl Coke, vice president of the Bank of America, San Francisco, one of the panel members, pointed out the need for better credit and financing facilities for the purchase of fertilizers. He suggested the formation of a fertilizer industry committee in California to discuss these problems and to find solutions to them.

Another member of the panel, Roy Kennedy, general credit manager of

(Turn to CALIFORNIA MEET, page 20)

Ray Hubble New President of Oregon Weed Group; Medford Chosen '59 Site

LA GRANDE, ORE.—Ray Hubble, Medford, was elected president at the seventh annual Oregon State Weed Conference here, Nov. 13. The more than 250 Oregon farmers, ranchers, weed control specialists and chemical company representatives from scattered sections of the nation discussed weed control problems and latest scientific developments.

Medford was selected as the 1959 convention site. Other new officers named were board members, Ed Draper, La Grande, and George Kitzmill, Portland. Rex Warren, Corvallis, was reelected secretary, and Ray Kelso, Salem, was renamed treasurer.

Details of Oregon's intensive ragweed control campaign were explained to the group by George Moose, Salem, state Department of Agriculture ragweed control supervisor. He said the state pressed its campaign against ragweed in 10 counties on more than 10,000 acres this year. War was launched on "sneeze weed" in late 1957, with a legislative appropriation of $52,000 for the biennial period ending July 1, 1959.

Dave Chilcote, OSC research agronomist, told the group that up to 95% control of Canadian thistle has been obtained through the use of the chemical, Amitrol. He indicated that spot treatment on the basis of 4 lb. of active chemical per acre gave excellent control of the thistle during the bud stage.

The chemical also looks promising for treating thistle two weeks ahead of planting the crop without residual damage to it. Mr. Chilcote emphasized these findings are preliminary and cannot yet be recommended.

Dean Swan, research agronomist at Oregon State College's Pendleton branch experiment station, reported a new weed control program to help wheat growers "live" with morning glory. Two years of trials indicate that a combination of proper cultivation and use of 2,4-D spray can give farmers an economical control of this weed.

The control measures include tilling of fallow land until about July 1, then spraying with 2,4-D amine when the morning glory comes to the bloom stage or maximum growth.

Three pounds of active ingredient

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Paul M. Ruedrich

Colloidal Products Names New Director of Research

SAUSALITO, CAL.—Colloidal Products Corp. has announced the appointment of Paul M. Ruedrich as research director. The new appointee is a graduate of the University of California and spent 20 years as research chemist with the Tidewater Associated Oil Co., followed by 15 years of service as chemical director for Griffin Chemical Co., San Francisco.

In addition to currently serving as a member of the Engineering Society's personnel service, Mr. Ruedrich is a past chairman of the San Francisco section of the American Chemical Society.

At Colloidal Products, he will coordinate his activities with C. E. Miller, technical vice president. The company, engaged in the agricultural chemical adjuvant field for 35 years, is presently intensifying its research in the development of solvents and emulsifiers.

Ammonia Institute Sets Annual Convention Program

MEMPHIS — The eighth annual meeting of the Agricultural Ammonia Institute will be held in Chicago, Dec. 3-5.

Paul J. Duesterhaus of Quincy, Ill., is president of the organization and will preside at convention sessions. Headline speakers will include Ed Lipscomb, director of sales promotion and public relations of the National Cotton Council; Dr. William A. Albrecht, head of the soils department of the University of Missouri; Dr. Tom S. Hamilton, associate director of experiment stations for the University of Illinois, and Zenas H. Beers, director of the Chicago office of the National Plant Food Institute.

A series of discussion panels of several phases of ammonia's role in agriculture is planned for the convention.

Spring Fertilizer Sales In Texas 15% Higher

COLLEGE STATION, TEXAS—The total tonnage of fertilizer sold in Texas during the spring of 1958 was about 15% higher than in 1957. The tonnage of mixed goods increased about 8%, while the tonnage of materials was up more than 21%, reported the Texas A&M College extension service.

Mixer goods accounted for 43% of the total tonnage sold during 1958, as compared with 46% in 1957 and 60% in 1953. Mixed goods averaged close to an 8-16-8 grade, as compared with 6-12-6 in 1953. Grades of the 1-2-1 ratio accounted for 69% of the total tonnage of mixed goods while grades of the 1-1-1 ratio accounted for 11%.

Sales of materials were 21% higher than last year. Sales of anhydrous ammonia were up 32% and ammonium sulfate sales increased 36%. Sales of ordinary superphosphate were down 24%, and of concentrated superphosphate 20%. The combined tonnage of nitrogen materials amounted to 150,124 tons, as compared with 112,227 tons in 1957.

Extra Phosphate Proves Fruitful for Farmers

EAST LANSING, MICH.—Adding extra phosphate to the fertilizer they applied to wheat gave some Gratiot County, Michigan, farmers an additional $29.03 net return on their crop this year, reports Dr. Lynn Robertson, Michigan State University soils scientist.

Dr. Robertson bases his figures on a survey of 68 wheat growers in Gratiot County. This survey was conducted by Dr. Robertson and John Baker, county agricultural agent.

The survey showed that the 34 farmers with the highest wheat yields used an average of 20 more pounds of phosphate per acre in the fertilizer they applied for the wheat crop. The fertilizer they used averaged 36 lb. of nitrogen, 64 lb. of phosphate and 49 lb. potash. The 34 farmers with the lower yields used plant food containing an average of 33 lb. of nitrogen, 44 lb. of phosphate and 40 lb. of potash.

The 34 high-yielding farmers averaged 17.5 more bushels of wheat per acre than the 34 lower yielding farmers. The average yields of these two groups, respectively, were 66.5 bu. and 49 bu. per acre.

Figuring wheat at $1.75 bu. and the cost of the extra phosphate at $1.60, these high yielding farmers got an additional $29.03 for the extra phosphate used in their fertilizer.

Dr. Robertson and Mr. Baker emphasize that top yields and profits go to wheat growers who have their soil tested and then follow the recommendations of their state agricultural college agronomists and county agents for fertilizing the crop.

Ted J. Nickolas Joins Michiana Chemical Co. Staff

NILES, MICH.—Michiana Chemical Co. announced that Ted J. Nickolas of Lansing, Ill., has accepted the position of superintendent at the company's plant in Niles, Mich.

Mr. Nickolas will supervise the remaining equipment installation and be in charge of all plant operations, from manufacturing to shipping.

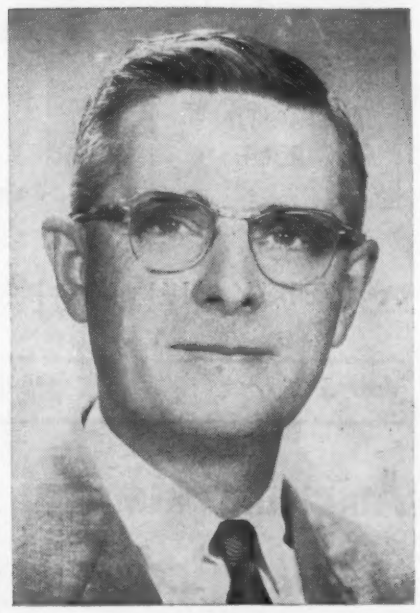
Mr. Nickolas was born and raised in Terre Haute, Ind., moved to the Chicago area where he became experienced with equipment and construction. He has 15 years experience with a major fertilizer company.

Minnesota Soil Survey

ST. PAUL, MINN.—Soil survey reports have been completed for 36 Minnesota counties, according to Dr. Rouse Farnham, soil scientist at the University of Minnesota. Each report shows soil types, individual farm locations and management advice for each type of land in the county. Soil Conservation Service workers in the respective counties, in cooperation with the University of Minnesota soil scientists, made the surveys, and more recent reports were written by Dr. Farnham and other University soils workers.

ARKANSAS FERTILIZER REPORT

LITTLE ROCK, ARK. — Fertilizer sales for September amounted to 13,569 tons or about 1,776 tons less than September, 1957, reported the Arkansas State Plant Board. Sales of materials and mixed grades were almost even, with 6,783 tons of materials being sold and 6,786 tons of mixed grades.



Arnold Bullis

SUPERVISOR—Arnold Bullis has been appointed laboratory supervisor at the fertilizer plant of the William Stone Co. at Ingersoll, Ont. A native of Chatham, Ont., Mr. Bullis became associated with the fertilizer business in 1934 when he joined the Canadian Fertilizer Co. at Chatham which was acquired by C-I-L three years later. Since 1946 he was employed as a chemical analyst in the soil and fertilizer laboratory. In his new position at Ingersoll he will be in charge of soil, fertilizer and feed analyses. The laboratory will also service the plant of the Witts Fertilizer Co. at Norwich, Ont.

Alabama Fire Ant Controls Draw Heat from Conservation Officials

MONROEVILLE, ALA. — A controversy is looming here between wildlife conservation officials and the plant-pest control service of the Department of Agriculture over claims of animal deaths resulting from fire ant poisoning.

Stories printed in two state daily newspapers touched off the conflict over the application of granular dieldrin locally as part of an insect control program.

Application of toxicants in the police jurisdiction of Monroeville began July 27 by workers from the local USDA office. The action followed an ordinance passed by the Town Council July 22, authorizing start of the program, with labor to be financed by an assessment of five dollars per residence or business structure.

The news story claimed a "survey of 36 home owners shows 697 dead chickens, 10 roosters, 20 turkeys, 11 cats, seven puppies, two ducks . . . and, just for the record, one squirrel, one rabbit and possibly one cow."

The remainder of the story related individual losses of animal life by number of residents and further infers children are in danger from the program.

When contacted for a comment on the accuracy of this account, Clay Pittman, local game warden, declared signed statements had been obtained by representatives of the Conservation Department from all persons named in the story.

Mr. Pittman is not quoted in either of the stories in the two papers nor are any of the local conservation department officers.

Thomas Lemons, representative of the plant-pest control office here, who has declared he made no statement to either of the papers on the survey is quoted as saying "not more than one animal in 50 was killed." He has termed the claims of animal fatalities "grossly exaggerated and ridiculous."

Bill McMillan, city clerk, is quoted as stating he had heard of very few "kills" and that there had been few complaints about the program, part of a 3-year plan which calls for treatment of breeding places of flies and mosquitoes next year at no extra cost. Mr. McMillan confirmed to The Monroe Journal his statement to the state papers.

A city official, who asked not to be quoted and declined any extensive comment, declared the town council would give due consideration to any request presented in regard to the poisoning program.

Dr. W. H. Hines, local veterinarian, said he has seen only one animal which was reported sick after having come into contact with the poison. He stated he did not know if the animal eventually died. Dr. Hines pointed out no death from the poison could be verified unless an autopsy is conducted by experienced laboratory technicians.

Three local physicians were contacted for opinions on what danger from the poison humans might encounter.

Dr. Rayford A. Smith, Jr., referred to research reported by Dr. E. O. Majure, a Tallahassee physician, who recently visited Monroeville. Dr. Smith said work is still in progress to determine the toxicity from the poisons in humans.

Dr. Francis Nicholas said most of the information on the effect of the poisons on humans has been reported by Dr. Majure. Dr. Nicholas pointed to the need for more experimental, documented findings including autopsies of dead animals.

Dr. W. W. Eddins said if research proves danger exists from the presence of poison in Monroeville, he would definitely advise against its further distribution.

EARWIG DOESN'T LIKE THIS SOUTHERN HOSPITALITY

COLLEGE PARK, MD.—A new bug hitchhiked into Maryland recently but it didn't stay long. The University of Maryland agricultural extension service swung into action before the newly arrived insect had a chance to investigate the advantages of life in Maryland. The infestation of the European earwig was discovered for the first time in the state on a lilac plant near Wheaton. A specimen was sent to David Kidd, Montgomery County assistant county agent, who forwarded it to T. L. Bissell, general entomology specialist of the University of Maryland. Mr. Bissell and Dr. Ashley Gurney of the U.S. Department of Agriculture gave the new immigrant a fair and quick trial. In the process they determined the insect as Forficula auricularia L. traveling under the common alias of European earwig. They judged the bug as being obnoxious in character and, like the rest of his species, had a long record of being a nuisance in houses and causing damage to flowers, vegetables, fruit and other plant life—in short, an undesirable. They passed sentence of extermination and forwarded their findings to Dr. William E. Bickley, head of entomology department. He requested Dr. W. T. Johnson and C. W. McComb, of the department, to carry out the sentence, which they did by insecticide treatment of the property. The infestation here was due to the importation of plants with soil from New York State, "and we have every reason to believe that the infestation of the European earwig in Maryland has been eliminated," Dr. Bickley said.

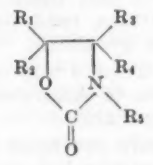
Industry Patents and Trademarks

2,860,035

Production of Highly Concentrated Nitric Acid. Patent issued Nov. 11, 1958, to Bernard G. Mandelik, Pleasantville, N.Y., assignor to Chemical Construction Corp., New York. A method of producing highly concentrated nitric acid from a dilute nitric acid of about 55-67% HNO_3 content while avoiding extensive decomposition thereof to oxides of nitrogen which comprises preparing a preheated mixture of said dilute acid with aqueous magnesium nitrate solution of about 73-76% $MgNO_3$ content having a temperature of about 260°-280° F. in proportions such as to produce therein a weight ratio of magnesium nitrate to water of about 70:30, flash distilling said preheated mixture by discharging it into the upper part of a distillation zone maintained at the boiling point of a 95-99% nitric acid and thereby forming vaporized nitric acid having a low content of water vapor, and drawing off and condensing said vaporized nitric acid.

2,860,043

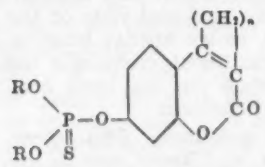
Method of Regulating Plant Growth. Patent issued Nov. 11, 1958, to Henry Bluestone, Cleveland Heights, Ohio, assignor to Diamond Alkali Co., Cleveland, Ohio. A method of treating plants which comprises contacting said plants with a plant growth regulating amount of a compound having the formula:



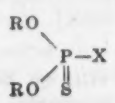
wherein R_1, R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, acetyl, benzoyl, alkyl radicals containing from 1 to 19 carbon atoms, aryl, alkaryl, aralkyl radicals and a carrier, wherein said alkaryl and aralkyl radicals contain from 1 to 4 carbon atoms in the alkyl substituent.

2,860,085

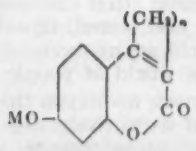
Process for Preparing Phosphoric Esters of Substituted Umbellipherone, and Pesticidal Compositions Obtained Thereby. Patent issued Nov. 11, 1958, to Raffaello Fusco, Guiseppe Losco and Cesare Augusto Peri, Milan, Italy, assignors to Montecatini Societa Generale per l'Industria Mineraria e Chimica. The method of preparing thiophosphoric esters of the general formula



wherein R represents a lower alkyl and *n* represents the integers 3 and 4, said method comprising introducing the finely powdered halide of an O,O-dialkylthiophosphoric acid of the general formula



wherein X is a halogen taken from the group consisting of chlorine, bromine and iodine, and a heterocyclic phenolic compound of the general formula



wherein M represents sodium and potassium, into a solvent for at least one of said compounds, reacting said compounds at a temperature ranging from 10° to 150° C., adding an excess of water and separating and washing precipitated solids.

2,858,260

Preparation of Benzene Hexachloride. Patent issued Oct. 28, 1958, to Joseph A. Neubauer, Pittsburgh, Pa., and Franklin Strain, Barberton, and Frederick E. Kung, Akron, Ohio, and Frederick C. Dehn, New Martinsville, W.Va., assignors to Columbia-Southern Chemical Corp. In the process of preparing benzene hexachloride by catalytic additive chlorination of benzene, the step of reacting chlorine and benzene in a liquid reaction mixture containing a compound selected from the group consisting of methyl sulfate and ethyl sulfate.

Legislation Discussed At Hazleton Conference

PALO ALTO, CAL.—What the new food additives legislation means to industry was the theme of a conference sponsored by Hazleton Laboratories and held at its western division here Nov. 5 and 6. The meeting, designed to provide opportunity for evaluation of chemical products in terms of the new amendment, was attended by more than 50 representatives of West Coast firms involved in chemical and food industries.

Speakers at the two-day conference discussed the effect of past food and drug legislation on pharmaceutical and agricultural industries, and methodology for biological evaluation of food additives.

"Concepts and principles behind food and drug legislation have not changed, but have merely been made more inclusive through extension to the food industry," stated Dr. Ralph Fogleman, manager of the western division, who moderated the conference. "Understanding of the law, and early successful compliance, are essential to the achievement of a solid sales position. Refusal to act promptly may well result in substantial financial loss as well as loss of consumer confidence."

The importance of biological understanding of the action of food additives was stressed.

Speakers at the conference included: Dr. Francis A. Gunther, citrus experiment station, University of California; Dr. T. W. Green, associate medical director, Cutter Laboratories; Professor Wayne D. Hudson, Stanford law school; A. G. Salter, Sunkist Growers; and Hazleton Laboratories' staff members Dr. Lloyd W. Hazleton, president; Dr. Fogleman; Dr. O. E. Paynter, and Theodore O. Tuft.

THE MAN WITH THE ★ MULTIWALL PLAN

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PACKAGING SPECIALIST
WALTER STALER

helps packer cut his Multiwall costs by $60,000

Union Packaging Specialist Walter Staler is an economy expert. His Multiwall customers can vouch for it. One of them—a Midwest packer—recently asked him to analyze his bagging operation. Savings to the company are expected to hit $60,000 a year!

The analysis, made through Union's 5-Star Packaging Efficiency Plan, showed that the basis weight of each bag could be reduced by 20#. Another recommendation: Standardize all Multiwall styles and sizes to improve inventory control and simplify purchasing.

Union Multiwall Recommendations are based on this 5-Star Packaging Efficiency Plan

- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

Union also suggested simplifying bag printing by changing it from two-color on both sides to two-color on one side. And, switching from a full white to a less expensive semi-bleached sheet. These improvements, together with new work and copy created by Union's Art Department, resulted in a more attractive, more economical package.

This $60,000 savings story is another example of what can happen when Union's 5-Star Plan goes into action. Why not put it to work in your plant?

Better Multiwall performance through better planning

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UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

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NO "PUSH-BUTTON" SELLING . . .

Success in Future Depends Upon Better Techniques of Marketing

By Frank S. Washburn*
General Manager, Agricultural Division
American Cyanamid Co.
New York

IT HAS been said, that to be successful in our industry, a man must have some very special traits of personality and character: courage, resourcefulness and integrity. But I submit that the outstanding requirement for the agricultural chemicals career man is faith in the future.

An excellent example is the fact that the NAC Association began its life in the year 1933. Now that was a year when not many people were starting anything, least of all an organization dedicated to the production of chemicals for agriculture.

Today in mid-twentieth century with all the problems and the intangibles we wrestle with, it is worthwhile to pause a moment and look back at the kind of world we lived in when a handful of industry men laid the cornerstone for the NAC.

I have here a copy of the New York Times, dated Oct. 31, 1933, exactly to the day, 25 years ago! Here are a few of its headlines:

"ROOSEVELT WINS LOWER RAIL PRICE FROM STEEL MEN"

"BRAZIL HOLDS UP FRENCH DEBT INSTALLMENT"

"HITLER QUITS LEAGUE OF NATIONS"

"LEGAL LIQUOR EXPECTED BY DECEMBER"

In 1933, you could buy corn at 19¢ a bushel. Top grade wheat was going for 33¢ a bushel. There were more than $25 million of farm mortgage foreclosures . . . another $600 million in farm mortgages were delinquent.

One quarter of the 1933 cotton crop was plowed under and nobody could understond why six million pigs and two million brood sows had to be slaughtered, and their carcasses used for fertilizer.

That was the farm problem in 1933.

It would have taken a Jules Verne in 1933 to foresee the tremendous advances to come later. Even the most optimistic economic visionaries would have hesitated to predict the markets we work with today. The most foresighted researchers would have regarded defoliants, selective herbicides, systemic insecticides, plant hormones, and antibiotics as fantasies worthy only of a pot-boiling writer of science fiction.

So in 1958 we can somewhat smugly look at our world and glory in the progress which has been made. And it is, of course, nothing more than human to do this.

But this kind of view negates that great teacher, experience. There would be little utility in looking backward at all, unless we can discover ideas, trends, insights that will help us to live in the present and make ready for the future. In doing this, it is again very human to separate our lifetimes neatly into packages of time. We can refer then to different periods as the "depression years," or, the "war years," or the "New Deal Years." It is too bad that time itself does not unfold in such clearly marked chapters.

There was an ancient Greek philosopher who tried to explain it this way. He said, "The water in the river is the last of yesterday's water . . . it is also the water of the present . . . and it is the beginning of the water of tomorrow."

In modern language, he was saying, that the past, the present and future overlap, one into another.

A view of agriculture today, for example, shows some farmers way out in front, many wavering in the middle and a good number still struggling with the same old problems and the concepts they have not changed since 1933.

There are a great many people outside agriculture and perhaps a few people inside agriculture who do not fully appreciate this.

This lack of understanding has given rise to a very confused picture of the American farmer. To some, he is a highly alert Phi Beta Kappa, who can hold his own with the most advanced scientific and business thinking, but to others he is merely a struggling economic serf chained by circumstances to his decaying homestead. And there are all kinds of descriptive shades in between.

As we know, the plain truth is that the American farmer is not a single type . . . neither an oil painting by Grant Wood nor the bumbling country cousin portrayed by cartoonists. Nor is he the starving share-cropper of the "Grapes of Wrath." All kinds of political and business errors can be made in an attempt to attach a single all-purpose descriptive label to the men who as a group make up American agriculture.

This is not a particularly profound observation . . . nor is it intended to be one. There would be little point in making such an observation, except for the fact that there are many temptations to find a panacea, a quick route, a vending machine approach to the problems of providing the agricultural community with goods and services.

Much has been written, and much said, about the great technological revolution in agriculture. As a result it might be easy to believe that farmers are sitting around waiting for more miracles from the chemical laboratories.

If this were true, our lives would be a lot less complicated. We would have only to sit back in our home offices and push a magic button labeled "SELL."

Perhaps, no one would be looking for a magic button, consciously or sub-consciously, unless there had been considerable success in other fields.

In the years between 1933 and 1958, a good many areas of American business began to discover that the basic problem they faced was not production, but the marketing of their products.

Again, this was not a profound discovery. It was only in the increasing efficiency of their selling methods that there was something new.

The mass market and mass marketing methods were one of the most dramatic developments in our business economy during these past 25 years.

A good example is the selling phenomenon we call the supermarket. The first ones in 1933 were nothing more than a device to cut selling costs by eliminating the overhead of many neighborhood stores and heavy retail personnel.

It did not take very long for supermarket operators to discover that they had stumbled into something that had much more potential. There was something about supermarket shopping that appealed to customers.

By skillful use of packaging, display, pricing and advertising the supermarket could emotionally influence buyers. They bought better merchandise and this built supermarkets into the fastest growing, and the strongest element in our retail economy. This kind of marketing has had tremendous impact upon all of us. It has created new products and new demands. Push-button selling has spread, and it is almost the rule, in many other industries.

The secret of mass marketing is the fact that first you are dealing with a tremendous number of customers . . . and second, the vast majority of these customers respond to predictable appeals. And third, the law of averages prevails so that the few who do not respond to a standard sales story are cancelled out by the many who do. The whole cycle gets underway through the undeniable power of advertising and publicity.

This very quick look at the past will have been in vain if we do not gain something from the experience of living through it.

Where do we stand today in the agricultural chemicals industry?

We are looking at an agricultural economy that has been subject to tremendous changes. There have been shifts, differences in outlook and an almost phenomenal expansion during these past 25 years.

However, we must recognize that this is not an entirely bright new world equipped with a new set of rules and-a new cast of characters. Many of the same old problems which were with us in 1933 exist today. The roots of today's agriculture still partially grow in the soil of 1933.

We may be wrong if we think we can abruptly shift our attitudes and methods without taking into account the cultural and economic lag that is always present from one extreme in agriculture to the other.

We may be wrong, or maybe fifty years ahead of our time, if we think we can abandon the crusading spirit and the willingness to get out to the farm itself to make our sales. And, we may never arrive at the stage where an over-engineered product will take the place of on-the-spot service.

In addition, we are looking at an agricultural economy that is tied, as never before, to many diverse elements. Farming today is highly dependent upon the ingenuity and the marketing skills of many people who, on the surface, have nothing to do with agriculture.

There is scarcely a tobacco farmer in the U.S. who is not dependent upon the ability of the cigarette manufacturers to keep the public sold on his products.

So as suppliers to agriculture, we must more than ever keep ourselves aware of the trends and the tastes and the marketing progress of the end products of agriculture. If this 1933 newspaper mentioned earlier were dated Oct. 31, 1983, it would be worth a million dollars to anyone in this room. You would then know what kind of products Americans would be buying 25 years from now. . . . You would know what kind of changes occurred in taste and product preferences and automatically you would know today where to put your research dollars and how to gear your selling organization for the future.

But somehow or other, we have to do these things without the 1983 issue of the newspaper. And certainly this can't be done without a deliberate and constant effort on our part to keep abreast of what is going on outside of our industry. More and more, business will require well-rounded, farsighted people who can master far more than the day-to-day procedures of selling our products.

Finally, and this is perhaps one of the major threats of our times, we must avoid at all costs any temptation to believe that there are shortcuts, push-buttons, ready-to-wear solutions to our problems.

There is a trend, a way of thinking in many areas of American business that encourages this.

It is probably the most dangerous philosophy a system like ours can embrace. On every side you can see businesses and businessmen who are coming to believe that there is a way to avoid responsibility. They seem to believe that somehow or other there is a way to use gadgets, gimmicks or exotic techniques that will make it possible to get results without inspiration, perspiration or ever sticking out their necks.

I am glad that very little of this kind of thinking has thus far rubbed off on the agricultural chemicals industry. We still are the kind of business where the empty promise and the gaudy slogan have not yet replaced honest effort and sincere service.

No one, of course, can predict what will be found in newspapers 25 years from today. But, based upon the past, taking an unbiased view of the present and, as we always have to do in the agricultural chemicals industry, I will stick out my neck and make these predictions:

Good salesmen, who know their business, and know how to give real service, will be in as much demand as they are today.

A special price will never provide a satisfactory, long-term substitute for quality, service and salesmanship.

No one will have discovered a way to substitute direct mail for man power.

People will still be hoping that they can get something for nothing, but nobody will seriously expect it.

In short, despite men on the moon, automobiles that will probably be longer and lower than they are today, and television that includes smell with sight and sound, it will be the kind of world we understand, because it will be a world of people.

And farmers, or maybe they will be agricultural executives, are after all people—the same people we have served in the past and will continue to serve in the future.

*From address presented before the 25th annual meeting of the National Agricultural Chemicals Assn., Savannah, Ga., Oct. 29-31, 1958.

AMMONIA INSTITUTE

(Continued from page 1)

and former vice president and sales manager of Ralston Purina Co., St. Louis; and Zenas H. Beers, director of the Midwest office of the National Plant Food Institute, Chicago.

Representing the National Plant Food Institute's Washington office will be Delbert C. Rucker, of the Institute's publications staff. F. E. Hartzler, professor of economics at Kansas State College, Emporia, will present an address as part of a discussion on NH_3 economics.

Panel discussions are scheduled to be held on subjects including agronomy, insurance, safety, methods, time and rates of placement, plant population, irrigation and fertilization, herbicides, insecticides, and other pesticides.

Taking part in the agronomy portion of the discussions will be Prof. C. J. Chapman, University of Wisconsin college of agriculture; Dr. Victor Sheldon, Olin Mathieson Chemical Corp., St. Louis; Charles Bourg, U.S. Steel Corp., Salt Lake City, Utah; and Dr. Samuel Aldrich, University of Illinois.

Participating in the safety discussions will be Norman LeBlanc, Mid-South Chemical Corp., Memphis; Richard Dorman, Bastian-Blessing Co., Chicago; Ray Engel, Schrock Fertilizer Co., Congerville, Ill.; and Dr. Paul Tucker, Phillips Petroleum Co., Bartlesville, Okla.

High level production factors will be approached from two directions at the meeting. One group will cover the chemical phase and another the practices phase.

Covering the chemical aspects will be Dr. S. W. Melsted, University of Illinois; Dr. W. E. Irwin, Phillips Petroleum Co., Bartlesville, Okla.; Dr. Leo E. Orth, Sinclair Chemical Co., Chicago; and Dr. Proctor Gull, Spencer Chemical Co., Kansas City, Mo.

On the practices side will be Dr. C. L. W. Swanson, The Texas Co., Chicago; Dr. H. B. Petty, entomology department, University of Illinois; Ernest Herrbach, Standard Oil Co., Chicago; and Dr. C. C. Compton, Shell Chemical Co., New York.

WEED CONFERENCE

(Continued from page 1)

2,4-D amine per acre was applied in Mr. Swan's experiment with a minimum of 20 gal. of water for ground applicators. It has not yet been tested for aerial application.

The story of Oregon State College scientists using radioactive tracers in chemicals to throw new light on how weeds are killed was told by Virgil Freed, Oregon State College agricultural chemist.

These studies are helping scientists vary formulation of chemicals to speed up action, and show how temperatures affect speed of chemical action in plants.

"Plants are not completely defenseless against chemicals, but in some cases are showing the ability to destroy the chemical," Mr. Freed explained. "This points up the possibility weeds may be able to build resistance to chemicals."

Ted Sidor, Union County extension agent, explained that the common barberry bush would probably be placed on the state's weed control list next year. The bush, which breeds stem-rust, caused some $400,000 damage to Union County crops this past year.

A panel of specialists discussed the formation and operation of weed control areas in various parts of the state and the amount of money appropriated in different counties for weed control.

By-Law Change Sought

MONTGOMERY, ALA.—A change in by-laws to provide for the addition of the Alabama commissioner of agriculture and industries to the advisory board of the Alabama Soil Fertility Society, Inc., will be the top item of business at the group's annual meeting at the Whitley Hotel here, Dec. 3-4.

Key spots on the speaking agenda will be concerned with subjects such as: "Opportunities for Increased Use of Fertilizer," "Super production Practices," "Fertilizer Potential," "The Value and Role of Soil Testing," "The Economics of Fertilizer Use," "The Outlook for 1959" and "The Farmers' Appraisal of Fertilizer."

Marketing Research Manager

WILMINGTON, DEL. — The appointment of Stanley Arasim, Jr., as marketing research manager in the product development department of Atlas Powder Co.'s chemicals division was announced recently by F. Faxon Ogden, department director. Mr. Arasim joined Atlas' marketing research section in February, 1957. Previously, he was a market and product development specialist for Atlantic Refining Co.'s chemical products sales, and was a staff member of the business research group at Arthur D. Little, Inc.

Cotton Conference Set for Houston

HOUSTON—A group of 18 speakers from across the nation will gather here, Dec. 17-18, for the Beltwide Cotton Production Conference program centered around "growing cotton for profit and markets."

The meeting is expected to attract some 800-900 scientists, educators, researchers and members of the cotton and agricultural chemical industries. It is being sponsored by the National Cotton Council in cooperation with other groups.

General chairman of the conference will be J. D. Hays of Huntsville, vice president of the Alabama Farm Bureau Federation. Mr. Hays also will deliver the stage-setting address for the conference. The program will open with a welcome by Burris C. Jackson of Hillsboro, chairman of the State-Wide Cotton Committee of Texas.

Preceding the production conference will be meetings of four associated technical groups. The groups will deal with cotton defoliation and physiology, disease control, cotton improvement and insect control.

BUYS PROCESSING FIRM

BRENTWOOD, CAL.—The United Heckathorn Co. of Richmond has purchased the fertilizer processing firm owned by Adrian Enos, located at 1304 North Second St., Brentwood.

"No ifs, ands, or butts . . . feed grown from potash-enriched soil is the best!"

FOR FERTILIZER MANUFACTURERS! USP now offers three outstanding grades of potash. USP's Higran, a new specially sized white granular (62/63% K_2O) and USP's Higrade muriate (also 62/63% K_2O). Both are the purest agricultural muriates now available. USP also offers Granular muriate which contains 60% K_2O. All three are non-caking and free-flowing throughout.
Our Technical Service Department welcomes your inquiries.

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Agricultural Knowledge Moves Slowly Where Allocations for Research Are Held Unnecessary

By Ralph W. Phillips*
Director of International Organization Affairs
Foreign Agricultural Service
U.S. Department of Agriculture
Washington, D.C.

WE LIVE in a world beset by differences between countries; differences in political philosophies, differences in levels of living, differences in the resources with which to improve living standards, differences in the skilled manpower and in the facilities for research to assist in harnessing the resources available to each country.

These and other differences between countries are not new to the present century. But they have become more apparent with the rapid advances in industrialization, mechanization of agriculture, and intercountry transportation and communication that we have experienced in the last fifty years.

Rapid increases in human populations have also played a part in accentuating differences, particularly in food supplies, for in this respect these increases have had their most marked effect in the densely populated areas that were already hard-pressed to produce enough food.

The rapid advances in science and technology in some countries, and particularly the revolution in agriculture in our own country, have led peoples in less developed countries to hope for similar developments in their own agriculture. But progress begets progress, and those countries which made the most progress in the modernization of their agriculture continue to move ahead at even faster rates, and the gap between the developed and the under-developed countries is probably growing wider, rather than narrower.

Research has provided the basis for rapid agricultural improvement in the more highly developed countries. Research has also made substantial contributions to agricultural improvement in some of the less developed countries. However, there are extremely wide differences between countries in the trained personnel, laboratories, experimental stations, and finances available for research in agriculture.

Next to such relatively universal languages as those of music and art, the language of research is one of those best understood by workers in all countries. Music can reach across national and even political barriers; but research, too, can reach across national boundaries. But if common understanding in areas such as music, art and research are to be used to the greatest extent in building cooperation and mutual understanding among countries, the differences that exist must also be recognized, and the reasons for them understood.

Between the musical prowess of a fine symphony orchestra and the drumming of an African tribesman, there are many different levels. There are also many levels of variation between the works of the best of the old masters and that of the Navajo sand painter. The variations between countries in the development of agricultural research are at least as extreme. Those variations range all the way from countries such as Canada, Australia, New Zealand, the countries of northwestern Europe, and the United States, which have well established research programs, to some of the least developed countries where agricultural research is so little known that even the simplest language of research is not understood.

Perhaps the best approach to this discussion of agricultural research in foreign countries is by an examination of the nature and extent of these differences between countries. If one undertakes to characterize the agricultural research of the world, or even of a few countries, it is an impossible task. Thus, only limited phases of the subject will be covered, to cover some of the major points of difference among countries.

Variations in Research Development

It is difficult to find suitable and precise yardsticks with which to measure the development of research. It is also difficult to obtain comparable data from various countries to use in applying any yardsticks that are selected.

One measure of the importance attached to research is the money expended thereon. Data from FAO† sheds some light on the expenditure for agricultural research and related fields. These data relate to the expenditures by governments for services to agriculture, and are shown in graphs with this article.

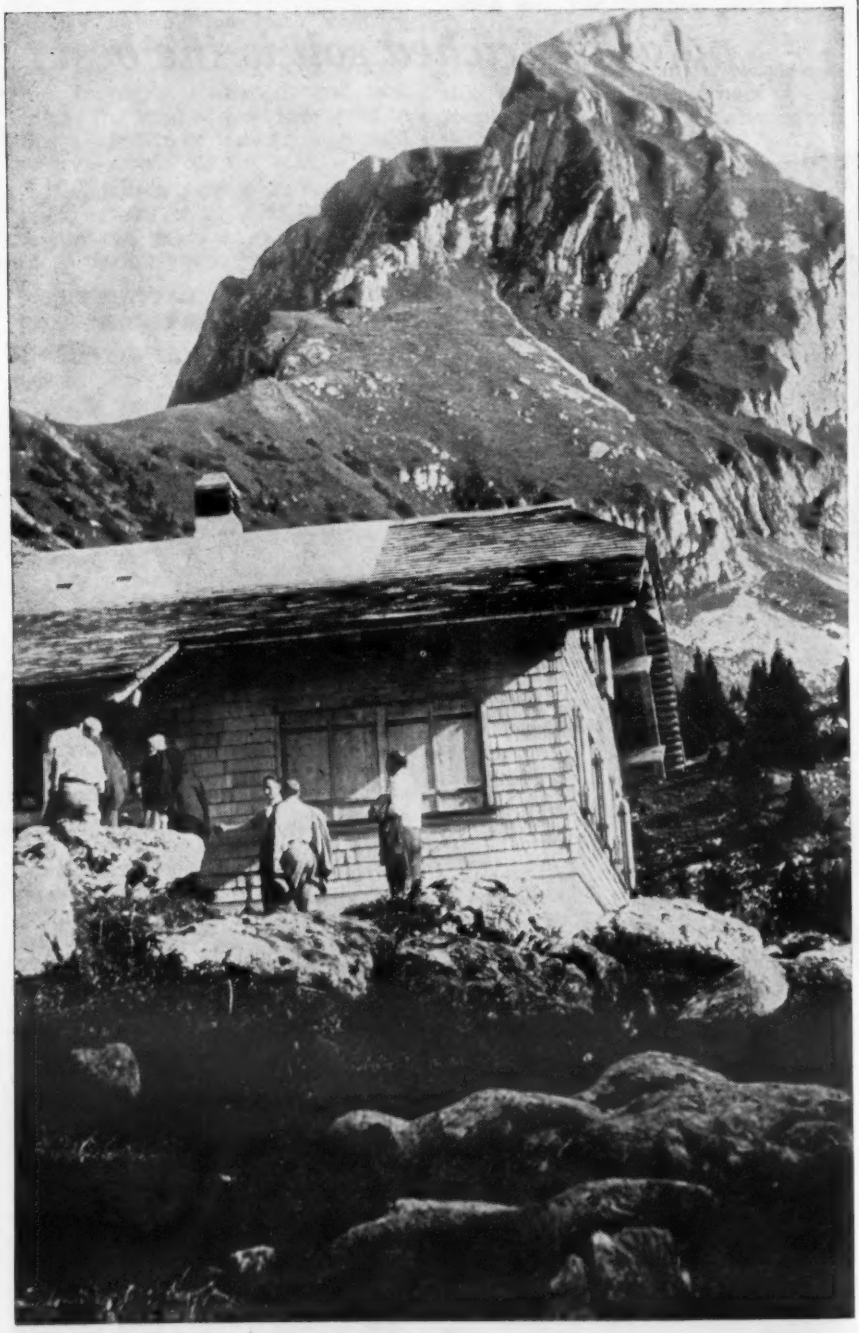
The top figure shows the expenditures by governments of 26 countries and territories for all purposes, in terms of dollars per person. Although only a portion of the countries and territories of the world is included, the variability that exists is clearly evident. These and additional data presented in the other figures were collected in 1953, so represent expenditures in a recently preceding year, depending upon the manner in which each government reported.

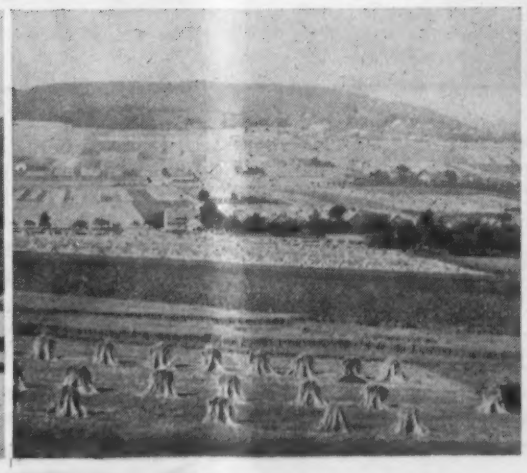
Against this background of variation in total governmental expenditures, what were the expenditures for agriculture? Data from 33 countries and territories are shown in the second graph and it will be seen that the expenditure per person ranges from less than a dollar per person in some countries to nearly $30 per person in Finland.

In terms of expenditure per person in the agricultural population, as shown in the third graph, it will be seen that the amounts varied in 23

*From paper presented to the Agricultural Research Institute of the National Research Council, National Academy of Sciences, Washington, D.C., Oct. 13-14, 1958.

†Food and Agriculture Organization of the United Nations, Rome, Italy.





MOUNTAIN DAIRYLAND—At left: mountain dairy farm in Switzerland, where milk is collected and processed during the summer when cows are grazing on high Alpine pastures. Below, left: Terraced rice fields on the island of Java, Indonesia. Long-time knowledge of erosion control is indicated. In the center, below, is a rich farming area in central Germany where land has been used for centuries. At right below, is scene at harvest time in Afghanistan, with workers winnowing grain by hand in ancient method.

countries and territories from a fraction of one dollar to over $70.

In a further refinement of the data to show expenditures per person in the agricultural population for agricultural research, education and extension, it will be seen from the lower graph that the amounts varied from well under a dollar in several countries to over $10 in the U.S., Canada and New Zealand.

Another yardstick of agricultural development and of a country's capacity to conduct research is the number of trained workers. In the study conducted in FAO, it was found that in 26 countries and territories, the number of persons having at least the equivalent of a bachelor's degree and being employed in key agricultural services varied from 0.05 to 291.3 per 100,000 inhabitants engaged in agriculture. Thus, the country with the most trained workers had 5,826 times as many workers as the country with the fewest, a startling difference when expressed in these relative terms.

It was also found that, in 21 countries, the number of students receiving degrees in agriculture during the five-year period 1948-52 ranged from 0.23 to 310 per 100,000 of the agricultural population. These, too, are startling figures. They indicate that, on a relative basis, approximately 1,200 times as many workers are being trained in the country at the top of the range, compared with the country at the bottom. Is it any wonder that the gap in agricultural progress between the developed and the under-developed countries grows wider rather than narrower.

In connection with the third in a series of inter-American meetings on livestock production, convened by FAO in cooperation with the Inter-American Institute of Agricultural Sciences (Phillips, 1956) it was possible to delve a little further into this problem of training for agriculture in the Western Hemisphere, specifically in relation to livestock production. It was reported to this meeting that in the U.S., during the school year 1952-53, degrees in agricultural and related subjects were awarded as follows:

Subject	Degree		
	Bachelor's	Master's	Doctor's
Animal husbandry	1,140	143	40
Other agricultural subjects excluding forestry	6,659	1,200	409
Veterinary medicine	*878	29	9
Home economics	7,517	608	47
Biological sciences	9,707	1,807	966
Physical sciences	10,414	2,711	1,714
Totals	36,315	6,582	3,185

*D.V.M.

At about this time the average numbers of "Ingenieros agronomos" degrees awarded per year in Colombia, Ecuador, Paraguay, Trinidad and Tobago and Venezuela were 50, 17, 16, 20 and 11, respectively, while none were awarded in British Honduras and Jamaica. In the veterinary field in these same countries and territories, the numbers of degrees awarded annually were 25, 6, 32 and 8, respectively, in Colombia, Ecuador, Paraguay and Venezuela, none being awarded in the territories not mentioned. Other countries in the hemisphere did not present any information on the number of degrees awarded.

The data are difficult to compare because the situation varies so much from country to country. However, the wide discrepancies in the numbers being trained are evident, and are particularly striking when it is realized that, taking only the degrees in animal husbandry, veterinary science and other agricultural subjects excluding forestry, 8,677 degrees were awarded in the U.S., while the combined total of agricultural and veterinary degrees for Colombia, Ecuador, British Honduras, Jamaica, Paraguay, Trinidad and Tobago and Venezuela was 185; a ratio of over 46 to 1. Actually, the number of doctor's degrees awarded in the U.S. in the same fields (458) exceeded the number of bachelor's degrees in the seven countries and territories listed above by a ratio of nearly 2.5 to 1.

Variations in the Organization of Research

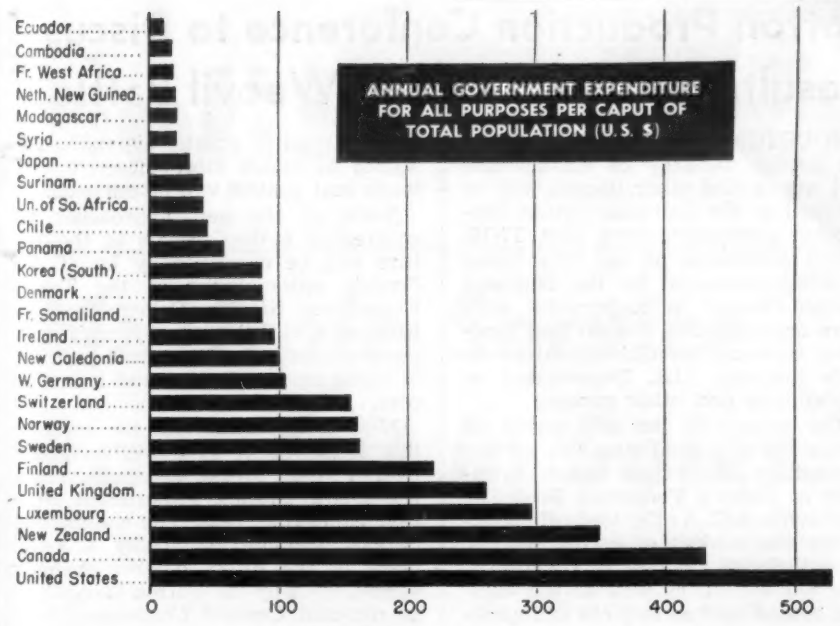
There are also some striking differences in the manner in which countries have organized their agricultural research, and particularly in the types of national bodies they have established to coordinate that research. Agricultural research traces its beginnings to Europe, and many of the countries of that continent (including the British Isles) have long records of achievement in this field. Therefore, the ways in which their research has been organized are of considerable interest.

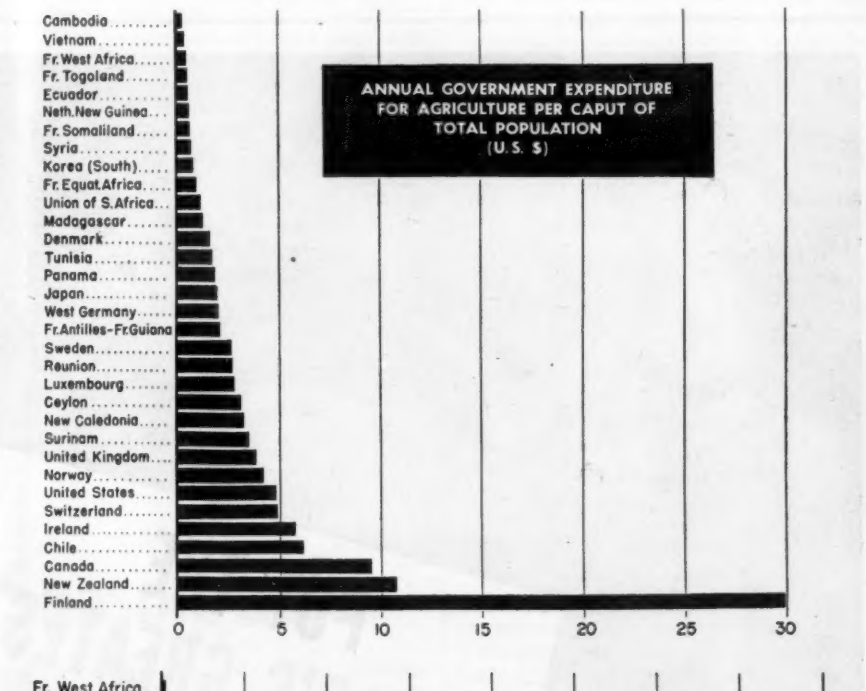
In October, 1951, FAO convened a meeting of European countries in London to discuss various problems associated with the organization of agricultural research (Phillips, Moskovits and Lininger, 1955). It became apparent during the discussions that the organizational arrangements for the coordination of agricultural research fell into three general groups.

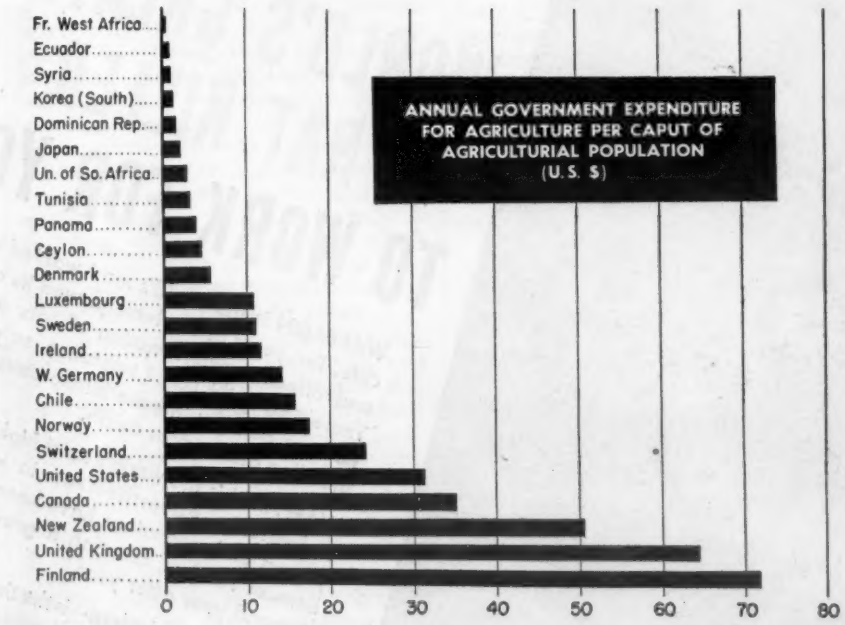
In the first group, of which Great Britain is an example, there is a high degree of centralization in the planning of agricultural research. In another group, of which Denmark is an example, research is carried out in a variety of ways, and there is no central body for coordination, although there is a very close informal cooperation between the workers and organizations concerned.

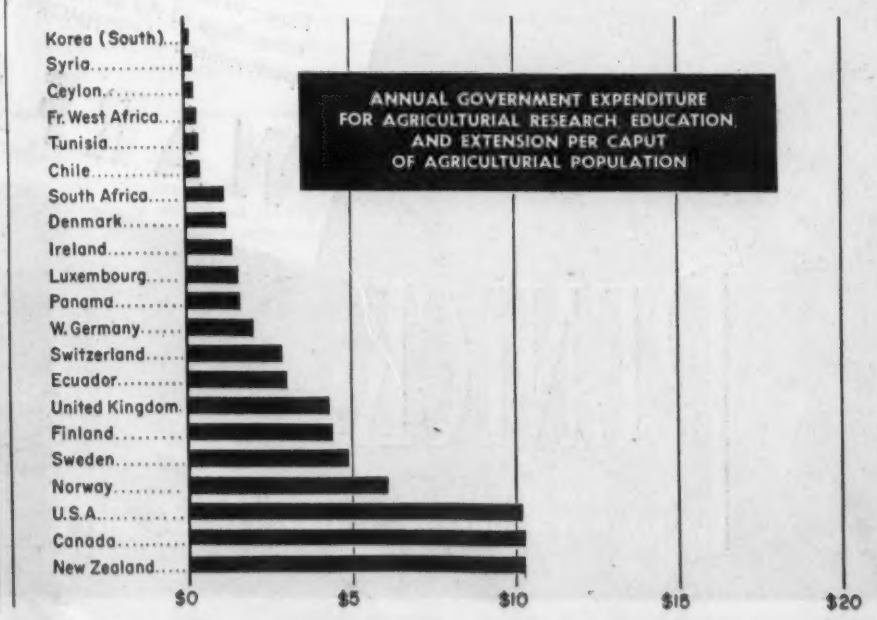
Between these two extremes a

(Turn to FOREIGN RESEARCH, page 18)

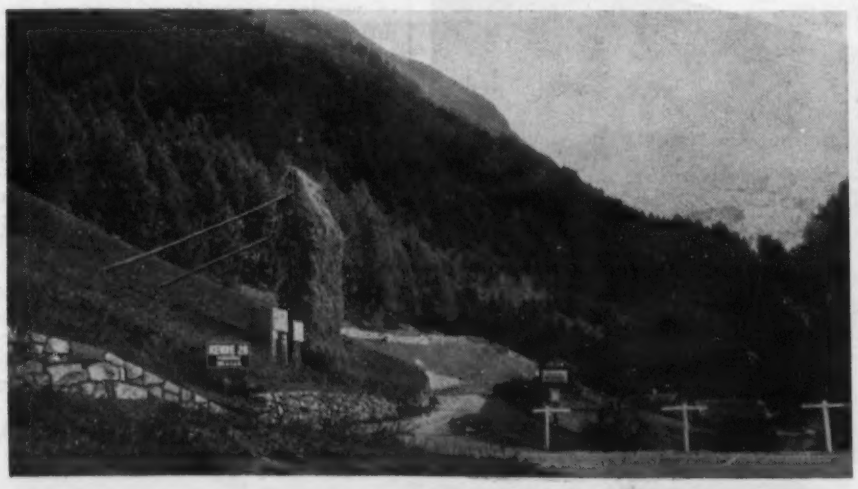








HIGHLAND FARMING—Below: Mountain farming area near the top of the Brenner Pass between Austria and Italy. On the right side of page are graphs showing expenditures by various countries in view of the agricultural population in each. Top graph shows government expenditures for all purposes in the 26 countries; second, annual government expenditure for agriculture per capita of total population; third, money spent for agriculture per capita of agricultural population; and at bottom, expenditure for agricultural research, education and extension per capita of agricultural population.



Cotton Production Conference to Discuss Results of Industry's Boll Weevil Battle

HOUSTON, TEXAS—Efforts of the cotton industry to combat the boll weevil and other insects will be outlined at the Beltwide Cotton Production Conference here, Dec. 17-18.

The conference at the Rice Hotel is being sponsored by the National Cotton Council in cooperation with farm organizations, Cotton Belt land-grant colleges, the agricultural chemicals industry, U.S. Department of Agriculture and other groups.

The impact of the boll weevil on cotton production costs will be described by Robert R. Coker, president of Coker's Pedigreed Seed Co., Hartsville, S.C. As the lead-off speaker on the subject of cotton insects, he will detail the cost of controlling the boll weevil, as well as the damage caused by loss in yield and quality. The need of greatly expanded research to attain more effective and lower cost control will be outlined.

Some of the new approaches to controlling cotton insects in the future will be described by Dr. T. B. Davich, entomologist at the Texas Experiment Station, College Station. Emphasis will be placed on insect control approaches that hold promise of being more effective and lower in cost.

New recommendations for controlling insects next year will be given by Dr. M. E. Merkl, entomologist at the Delta Branch Experiment Station, Stoneville, Miss. The recommendations will be essentially a summary of the insect control changes agreed upon by the Cotton Insect Research and Control Conference.

New Form of Molybdenum Offered to Treat Seeds

PORTLAND, ORE.—A new form of molybdenum was introduced recently by Climax Molybdenum Co., division of American Metal Climax, Inc., before a group of county agents and agronomists from Oregon and Washington.

The new formulation, a seed treatment compound trademarked "Moly-Gro," was reported by the company to effect harvest increases on peas, alfalfa, peanuts, soybeans, clover and other crops. William M. Stillwell, manager of agricultural sales and development for the company, told the group that this new development opens a way to practical application of molybdenum and could result in larger harvests.

The makers say that the material is used to treat seed before planting, rather than being added to the soil as a top dressing, thus permitting the element to begin functioning immediately. Readily soluble, it can be applied to seed while inoculating or slurry-treating with other compounds. Unlike the simple forms of molybdenum, such as sodium molybdate or molybdic oxide, it is completely compatible with inoculants, the makers say.

The new material is said to stick to the seed, providing a uniform coating difficult to rub or wipe off during planting or handling. Other forms of molybdenum do not adhere adequately unless mixed with some sort of sticker, the company says.

200 Attend Southern Crop Improvement Meeting

CLEMSON, S.C.—The 40th annual meeting of the International Crop Improvement Assn. here Nov. 10-14 was one of the best in the history of the organization, according to approximately 200 seed scientists and officials and representatives of crop improvement and seed growers' associations from 43 states and Canada who attended. The program was led by association officers, H. E. Finnell, Oregon, president; A. W. Young, Texas, vice president; and R. H. Garrison, S. Carolina, secretary-treasurer. Association members spent a good portion of their time in committee meetings considering matters such as general certification of seeds, seed stocks, legislation and by-laws, pathological standards of seeds, and information and cooperation in promoting the seed certification program.

Other committees were concerned with the study and establishment of standards and other factors of certification of seeds of farm crops.

Seed scientists and others concerned with seed certification and crop improvement in the nation appeared on the program. They included R. C. Edwards, acting president of Clemson College, speaker at the annual banquet; Dr. M. D. Farrar, Clemson dean of agriculture; Walter Cox, dean of students; Dr. O. B. Garrison, director, South Carolina Agricultural Experiment Station; Dr. R. W. Earhart, plant pathologist; Dr. W. C. Barnes, superintendent, Clemson Truck Experiment Station; and D. J. Watson, director, physical plant at Clemson.

Dr. R. M. Cooper, Wisacky, chairman of the Clemson College Board of Trustees and director of the State Development Board of South Carolina, was the principal speaker at a breakfast session and Robert L. Stoddard, Spartanburg, member of the agricultural committee of the Clemson College board of trustees, spoke at the opening supper.

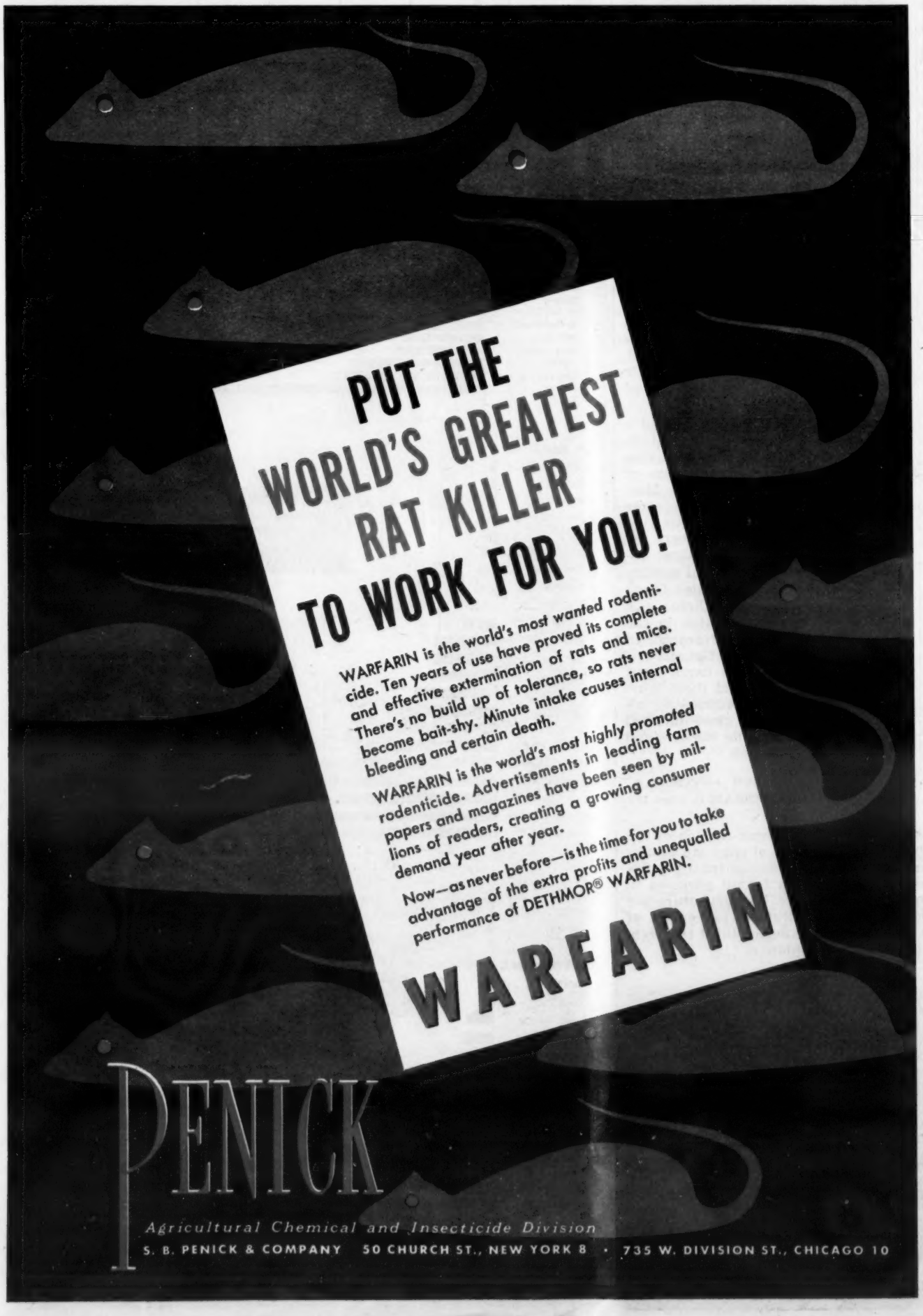
BARTER RULES

(Continued from page 1)

guard U.S. usual marketings, and to prevent undue disruption of world prices or replacement of cash sales for dollars.

To expedite barter transactions, three classifications of acceptable barter outlets for agricultural commodities have been set up. These classifications, based on an analysis of current economic and financial conditions and historical dollar marketings of U.S. agricultural commodities abroad, are designated "A", "B", and "C". Each designation involves a combination of an importing country and a specific agricultural commodity or group of commodities. An "A" designation indicates a higher potential as a dollar market than a "B" designation, and a "B" higher than a "C".

A complete list of the commodity-country designations, which will be revised from time to time as necessary, may be obtained from the Barter and Stockpiling Division, Commodity Stabilization Service, Room 3725 South Building, U.S. Department of Agriculture, Washington 25, D.C.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WARFARIN is the world's most highly promoted rodenticide. Advertisements in leading farm papers and magazines have been seen by millions of readers, creating a growing consumer demand year after year.
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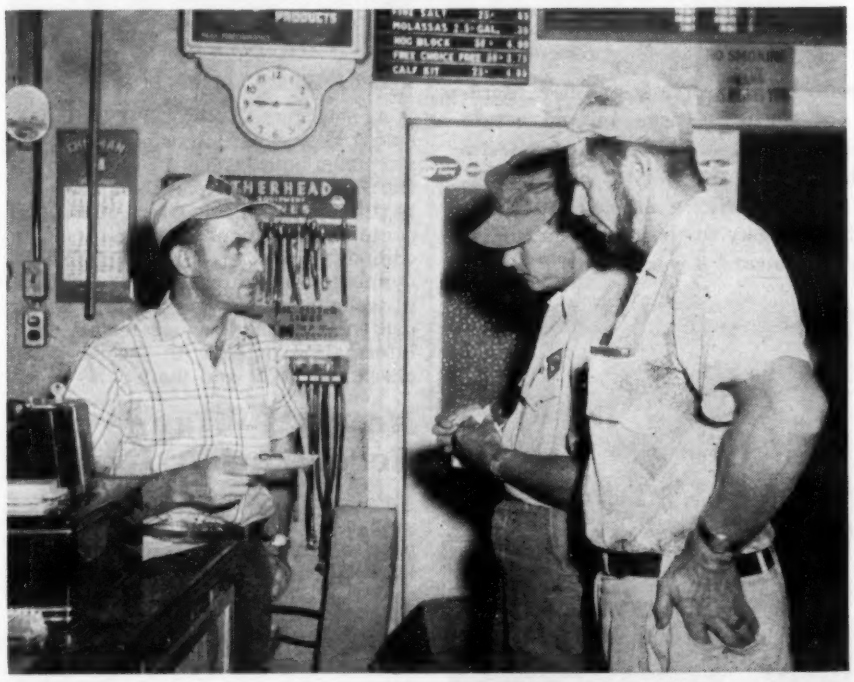


SHOP TALK is being utilized by Gordon Fletcher, operator of Fletcher's Store in Aldie, Va., as he briefs two of his eight employees on the plan of the day. A multiple service offer is the key to the success of the Fletcher firm.

Multiple Service Pays Off in Sales

By AL P. NELSON
Croplife Special Writer

A multiple service to farmers is profitable for Gordon Fletcher, operating a thriving farm supplies company at Aldie, Va.

If a farmer comes to the store and asks for fertilizer, for instance, he can get either dry or liquid fertilizer, or both from Mr. Fletcher. If the farmer wants the liquid nitrogen sprayed on his cropland, Mr. Fletcher orders one of his two spraying outfits to do the job.

And if the farmer wants feeds, and field, garden or flower seeds, he can get them here. Later in the season, if he wants custom weed spraying, the Fletcher firm can do it for him at a fair price and supply the chemicals with which to do the job.

If the farmer wants implements to till the soil, Mr. Fletcher can furnish them. He is the Allis-Chalmers dealer in the area.

Also, if the farmer wishes to buy televisions, radios, farm freezers, oils, greases, garden and lawn tools, power mowers or garden tractors he can do so at this modern farm supply store.

"We find that by carrying quite a few related or companion lines we have a stable, all year around volume," reports Mr. Fletcher. "Feed and fertilizer account for 40% of our volume, implements bring in 25%, farm appliances and farm hardware, bring in the other 35%. Not any one line would keep this business operating profitably at its present levels, but all the lines now contribute their share to make this a one stop store that farmers like to patronize. We've been operating on this basis for the past five years, with the exception of mobile mill service which we added in 1956."

"It is well known that very few dealers can exist on the sale of farm implements alone," reports Mr. Fletcher, "but certain seasons of the year implements sell very well. Our business is so organized that the busy implement selling season does not interfere with any other division. Mobile milling is heavy in fall and winter. Fertilizer sells well in spring as do farm implements. Insecticides, spraying service, farm hardware and appliances are in demand during the summer."

A full-time outside salesman is employed here principally to sell farm machinery, but he also devotes some time to selling fertilizer, farm chemicals, spraying service and appliances. In addition, the mobile mill operator funnels machinery and other leads to the outside salesman from time to time. Mr. Fletcher, too, spends some time in the field visiting and selling to farmers.

"Through our various services we contact farmers more often each year than we would if we sold only farm implements or feed," reports Mr. Fletcher, "and believe me, this really provides more sales opportunities for us."

In his newspaper and direct mail advertising, Mr. Fletcher calls attention to his various products and services. He also has an exhibit booth occasionally at a local county fair where he shows many products handled, in addition to farm implements.

Perennial Problem

Methods for Improving Off-Season Sales

By ROBERT D. ENTENBERG
Associate Professor of Retailing
University of Pittsburgh
Marketing and Sales Consultant

Business establishments are frequently faced with the problem of how to maintain adequate sales volume in traditionally slack periods. Managers and owners of small firms, because of comparatively limited financial resources and relatively small trading areas, often find the problem a challenging one. There is no single best answer. No universal method is applicable to all types of firms. Nevertheless, many realistic sales promotion "mixes" can be developed. They involve a combination of coordinated promotional efforts tailored to the type of merchandise you carry.

Seasonal Improvement Objectives

In the last analysis, increased sales with given facilities and inventory investments mean greater efficiency. This, in turn, means greater profits. But as one businessman put it: "It is far easier to boost our sales during the height of a selling season than it is to push unusual merchandise, supervalues, and patronage-developing services during our off-season times." For that very reason, too many merchants put only half-hearted efforts into improving sales during their slow seasons.

Yet, it is during those slack periods that important competitive advantages can be achieved. Steady sales are less costly to stock and to staff. They are also an antidote for times when profits don't cover fixed charges. But to improve takes planning in relation to known objectives. Therefore, you will usually get better results if you plan, say, to boost August sales in three lines, than if you just try to "jack things up" generally.

Customer Motivation and Product Differentiation

Customers buy things for many different reasons. Therefore, make the most of the distinctive motivational features of the merchandise that you carry when you set up any special promotional plans. Generally speaking, most stores can be classified according to the kinds of items they handle. There are three broad groups into which the bulk of consumer goods will fall: convenience, shopping or specialty.

Convenience goods (tobacco, cosmetics, sundries of an "impulse" nature, and the like). These are generally low in price and bought often. Substitution of alternatives is relatively easy, and purchases are made almost as quickly as the need enters the shopper's mind. Also, there are rarely any time-consuming price comparisons made before purchasing. Many such items have relatively slight seasonal patterns and may often be featured effectively in slack periods.

Shopping goods (apparel, accessories, furniture, home furnishings, appliances and the like). These are higher-cost items. Price comparisons are usually made and service is often an important consideration. Brands are more important than in convenience goods, but not absolutely essential. Patronage motives developed as a result of good service and high quality mean a lot to customers in deciding where to purchase. Price concessions plus more skillful personal selling can be helpful in stimulating sales during slow times.

Specialty goods (recreation equipment, do-it-yourself items, fancy groceries, and the like). These may be either extremely high, moderate or low in price. But they are goods with which price is not the chief purchase consideration. Rather they are items which the customer will go out of his way to buy because a name or a special feature is important. Customers, in the case of specialty goods, usually insist on an exact brand or type of goods for satisfaction and will accept no substitute. Sales appeals offering unusual opportunities to obtain desirable features or popu-

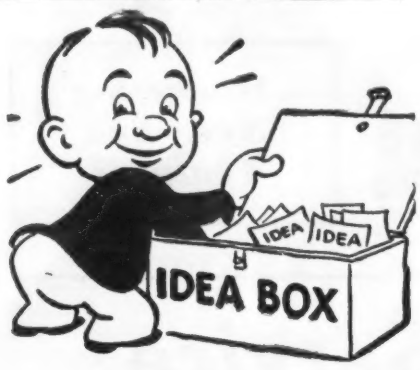
(Turn to METHODS, page 11)

SUMMARY

A perennial problem faced by owners and managers of small retail firms is: How to improve off-season sales. This article is designed to highlight some of the chief things that may be done to increase volume in traditionally slack periods. No one technique, of course, is generally applicable to all types of businesses, or at all times. Adding new product lines, putting on special seasonal promotions, arranging incentives and contests for customers and salespeople, up-grading the physical aspects of the store itself, and offering unusual bargains are some of the devices which should be considered. There are various others. Any approaches found pertinent can be promoted both as individual and as combination methods. This article attempts to review the key aspects of seasonal sales in terms of objectives, product characteristics, sources of supply, advertising media, promotional plans, timing, and nonprice competition. A list of specific methods is offered as a summary of what has proved useful in the past, and as a stimulus to creative thinking in the future. The article was prepared through the cooperation of the Small Business Administration.

New Laboratory Service

PALO ALTO, CAL.—Hazelton Laboratories Inc., Palo Alto, has announced a new laboratory service designed to provide pesticide residue analyses for growers. From representative samples, Hazelton can determine whether the crop contains residues in excess of the tolerances established for a particular pesticide on a particular crop.



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6830—Trailer Spreader

Simonsen Manufacturing Co. has added a tractor-drawn trailer spreader to its line of fertilizer spreaders. According to the company, the fertilizer dealer can start operations

earlier because he can get into the fields with a tractor where a truck spreader couldn't operate. The trailer spreader has an all-weather wheel-drive assembly and the unit's fan operates from the power take-off of any standard tractor. For details, check No. 6830 on the coupon and mail to this publication.

No. 6831—Silica Insecticide

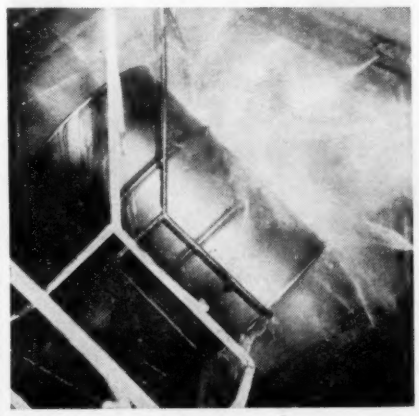
Davison Dri-Die Insecticide 67 is a new silica aerogel powder which is now on the market under an experimental label. Developed through research at University of California at Los Angeles, Dri-Die acts on insects in two ways: By dehydration and by a secondary chemical action. Insects need not eat the insecticide to be killed; simply crawling over the dust is sufficient. The Davison Chemical Division indicates there is no need for mixing, since the product is produced ready for treatment. Data on Dri-Die may be obtained by checking No. 6831 on the coupon and mailing.

No. 6833—Fly Repellent

Union Carbide Chemicals Co., Division of Union Carbide Corp., announces that Crag fly repellent has been cleared by the U.S. Department of Agriculture as an ingredient for livestock spray formulations on a "no residue" basis. According to the company, the product is effective against horse flies, stable flies, horn flies, mosquitoes, house flies and gnats. For information, check No. 6833 and mail.

No. 6832—Drum Phosphating Process

Bennett Industries, Inc., announces a steel drum phosphating process in which 30 and 55-gal. drums pass through an eight-step procedure. In the washer, hundreds of high pressure nozzles spray drums inside and out in each of six stages. In the final two steps, the drums are dried and the cooling is controlled so that they reach the paint spray equipment at the best temperature for paint application, the company says. According to the company, the film of phosphate coating received in the process provides a good surface and inhibits rust and corrosion. For details, check No. 6832 on the coupon and mail.



No. 7118—Bagging Scale

Burrows Equipment Co. has announced a new bagging scale. Known as Model No. 700, the scale occupies an area 18 in. square. It can be at-

tached quickly to a feed mixer, bin or hopper, and it will bag at the rate of six to eight bags a minute and the bag clamp is designed to hold paper, burlap or cotton bags of 50 to 100 lb. capacity. The weigh beam is built into the back of the scale. For details, check No. 7118 on the coupon and mail it to Croplife.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6822—Fertilizer Formulation Pad

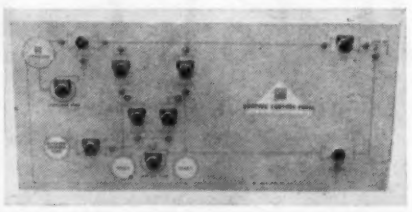
A new fertilizer formulation pad, suited as a guide for using "Uramon" ammonia liquors, has been issued by the DuPont Co., polychemicals department. The inside cover of the pad contains pertinent information on composition of fertilizer materials, ammoniation rates of phosphates, miscellaneous conversion, and water content of fertilizer materials. For information on how to receive pads, check No. 6822 and mail.

No. 6821—Range Fertilization Report

Balfour, Guthrie & Co., Ltd., has prepared a folder entitled, "2nd Report to California Ranchers on Range Fertilization." The brochure states that "second and third year results show average yearly increase in profits of $14.29 per acre." The folder will be sent if you will check No. 6821 on the coupon and mail it to this publication.

No. 6826—Graphic Control Panel

The Barnard & Leas Manufacturing Co., Inc., announces the addition of a graphic control panel as standard equipment on the B & L Auto-



batch and the B & L Autobatch Skid Plant line of liquid fertilizer equipment. The panel provides remote control and operation of various components together with visual indication of the sequence involved, the company says. The routing of finished products and raw materials to and from storage and load-out is by means of electrical controls. Check No. 6826 on the coupon and mail for more complete information.

No. 7229—Liquid Tote Tanks

Tote System, Inc., announced the inclusion of a 300-gal. capacity Tote tank in the "Trial Rental Program" instituted by the firm last spring. The tanks are usable for any liquid material and have eliminated the 55-gal. drum in a number of industrial applications, the company said. For further details, check No. 7229 on the coupon and mail to this publication.

No. 2053—New Bag Concept

A single-gusset, sewn-valve multiwall bag which the manufacturers say is a new concept in bag construction, has been developed and introduced by Bemis Bro. Bag Co. Designers say the single-gusset is difficult to distinguish from the two-gusset multiwall when filled, but that it stacks uniformly and can be easily palletized. Advantages cited include additional usable space created by the flat tube side, more room for product flow during filling, and reduction of blowouts. Products fed into the bags do not back up and clog the filler spout, cutting packaging time and

Send me information on the items marked:

- ☐ No. 2053—New Bag Concept
- ☐ No. 6818—Mobile Blender
- ☐ No. 6819—Boomless Fertilizer Sprayer
- ☐ No. 6821—Fertilization Report
- ☐ No. 6822—Formulation Pad
- ☐ No. 6823—Engine Driven Pump
- ☐ No. 6825—Truck Sprayer
- ☐ No. 6826—Graphic Control Panel
- ☐ No. 6827—Available Reprints
- ☐ No. 6828—Soil Gauges
- ☐ No. 6829—Cost Calculator
- ☐ No. 6830—Trailer Spreader
- ☐ No. 6831—Silica Insecticide
- ☐ No. 6832—Drum Phosphating Process
- ☐ No. 6833—Fly Repellent
- ☐ No. 7118—Bagging Scale
- ☐ No. 7188—Modern Farming Film
- ☐ No. 7205—Spring Truck
- ☐ No. 7210—Exhibit Display
- ☐ No. 7213—Mobile Floor Crane
- ☐ No. 7229—Liquid Tote Tanks

(PLEASE PRINT OR TYPE)

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67

Reader Service Dept. Minneapolis 40, Minn.

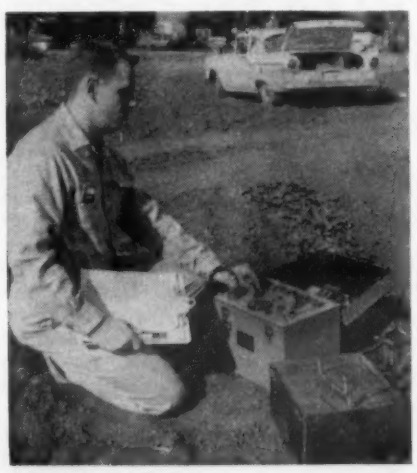
labor. Extra space provided by the flat tube side often permits utilization of a shorter bag and consequent reduction of the manufacturing cost of bagged products, according to Bemis officials. For more information check No. 2053 on the coupon.

No. 7205—Spring Truck

The Everlevell Co. announces a new economical spring truck. The company says the truck eliminates operator's fatigue by maintaining constant working level. A change of 3 lb. will readjust the platform to proper working height of about 29 in. from floor level. The truck handles up to 500 lb. and can be constructed to different weight requirements. Units can be custom manufactured in different sizes for special applications, the company says. For more details, check No. 7205 on the coupon and mail to this publication.

No. 6828—Soil Gauges

Two probes developed by Nuclear-Chicago Corp. permit rapid determination of moisture content and density on the surface level, the company says. The models P21 and P22 Surface Moisture and Surface Density Probes are the latest additions to the company's "d/M Gauge" system. The probes provide moisture and density measurements directly on the surface of the material eliminating the necessity of removing, weighing or destroying a sample of the ma-



terial for testing, the company says. Complete details can be obtained by checking No. 6828 on the coupon and mailing to this publication.

No. 6829—Cost Calculator

A pesticide and cost calculator has been introduced by the Pest-Cal Co. The company claims quick and accurate calculations for dosages of over 70 pesticides used in household, agricultural and weed control work. On one side of the circular chart insecticide formulations are divided into emulsifiable concentrates, wettable powders and solutions. When the calculator is rotated to the desired product, the dosage rate appears in a small window. On the reverse side a cost calculator figures finished spray cost. For information, check No. 6829 and mail.

No. 7210—Exhibit Display

A lightweight 10 ft. exhibit display designed for easy assembly is now available from Federal Displays, Inc. The exhibit is packed in a shipping case 4 ft. by 8 ft. by 3 in. and weighs 110 lb. The unit can be assembled in 15 min. without tools, officials say. Check No. 7210 on the coupon and mail to this publication for more details.

No. 6827—Available Reprints

Reprints of a large number of publications on all phases of fertilizer, soils and crops are available from the American Potash Institute, Inc. The institute says the reprints can be obtained in moderate quantities as long as its supply lasts. For a list of available reprints, check No. 6827 on the coupon and mail it to this publication.

No. 7213—Mobile Floor Crane

The Vanguard Engineering Co. announces the Aero-Crane, a counterbalanced mobile floor crane having

an adjustable boom with the hook reaching 48 in. beyond the front edge of the truck. The crane has a 10 ft. high reach and goes down to 1½ ft. from the floor. The running gear is of 10 in. diameter Timken bearing wheels for easy rolling, the company says. The unit is available in several models from 1,000 lb. to 3,000 lb. capacity. For more details check No. 7213 on the coupon and mail to this publication.

No. 7188—Modern Farming Film

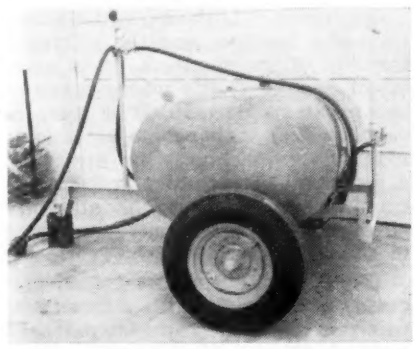
The recent introduction of "do-it-yourself" construction to steel farm buildings is the topic of a 16 mm color sound film, "The New Look in Modern Farming," released by Stran-Steel Corp. Shown in detail is the complete erection of an all-steel pole barn by four men in one week. For further details, check No. 7188 on the coupon and mail. Please print or type.

No. 6825—Truck Sprayer

The model 1,000 truck sprayer has been developed by Kaw Fertilizer Service, Inc. The pump kit allows the unit to be installed and operating in half a day, it is claimed. Features are: PTO-operated, 50 g.p.m. transfer, 33-ft. coverage, 1½-in. and stainless steel filter. The tank and booms are on skids and can be removed from the truck. The tank has a capacity of 1,000 gal. and is of 12-gauge metal. Check No. 6825 on the coupon and mail it.

No. 6819—Boomless Fertilizer Sprayer

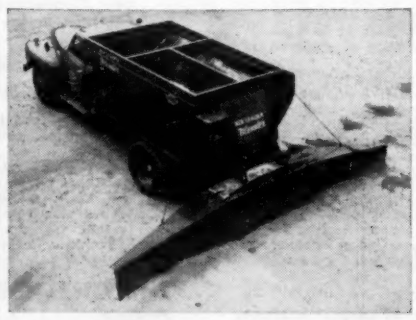
The Broyhill Co. announces a new low clearance, boomless fertilizer sprayer designed for fast application of liquid fertilizer. The unit is ideal, the company says, as a rental piece. The sprayer has no boom pipes and the low silhouette prevents tipping on rough terrain, the company says. The unit will spray a 35 ft. swath.



The trailer is of I beam construction with Timken Hi-Speed wheels. The tank is of steel with a 2-in. filler opening and a 270-gal. capacity. For more information check No. 6819 and mail.

No. 6818—Mobile Blender

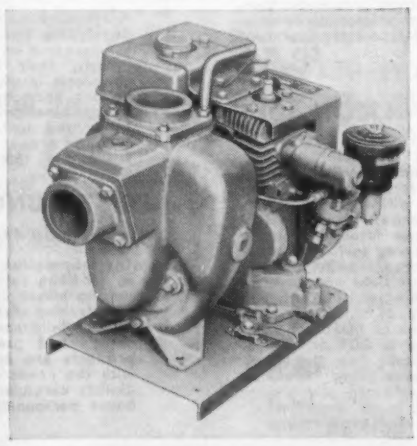
The Highway Equipment Co. announces the "New Leader L-42S Mobile" Blender. The unit will blend and spread three fertilizers at the same time, the company says. The spreader operator can change the fertilizer ratio for varying soil conditions, as determined by soil tests, while in the field. Three separate feedgates, each with a test box for metering, control the amount of spread, the company says, and a 7



h.p. engine drives the distributor fan assembly at a constant rate, regardless of truck speed. For more details check No. 6818 on the coupon and mail to this publication.

No. 6823—Engine Driven Pump

Marine Products Co. announces an engine driven pump of all-iron construction for application of liquid fer-



tilizers. The unit, called Flomax 8, is designed to withstand the corrosive effect of pumping liquid fertilizers, the company says, and is entirely self-contained with its own gasoline engine. The pump requires no power take-off connection and it is put into operation immediately after the piping connections are completed. For more complete details, check No. 6823 on the coupon and mail to this publication.

METHODS

(Continued from page 9)

lar brands are often successful in off seasons.

Many small stores, of course, carry merchandise which can be classified into two or even three of the above classifications. And, too, a given type of goods may have a different appeal for various consumers. For those reasons, merchandise classifications should be evaluated and promoted for a definite market. The importance of clearly distinguishing merchandise offerings by these broad classifications lies in the fact that, in your off-season promotional efforts, you must determine the most effective buying appeals to be applied. That determines the kind of sales "mix" you should use to get the best possible volume.

Working with Suppliers

To improve off-season sales, start by making sure that your stock has been wisely bought. This does not imply that you must be a perfect buyer. No one can be that good. It does mean that buying errors must be kept to a minimum.

In doing this, it is important to "work with" your suppliers—such as manufacturers and wholesalers—so that the best possible exchange of information results. Mutual understanding of seasonal problems is essential in having timely but varied merchandise for your particular public. Cooperation between you and your suppliers in describing, promoting and displaying goods is vital in building up sales during slack seasons. Also, suppliers will sometimes give a retailer a reduced price on smaller lots of the same merchandise he has been selling regularly. This permits a bargain offering at regular mark up.

Today, consumers are demanding, and getting, more and more information about the merchandise they buy. Consequently, an integral part of your off-season sales efforts should be furnishing them with unusually effective descriptions of your merchandise and of all the ways in which people will benefit by buying it. News aspects of merchandise promotions can also build sales through new customer interest and satisfaction. This is a job calling for cooperation of both store managers and suppliers.

Advertising Media for Smaller Firms

Small stores often find it worthwhile to put advertising emphasis on local shopping and sectional newspapers, on radio and television stations which have strong local trading area preferences, on selected direct mail listings, on localized circular distribution and on telephone and mail order selling. In the case of telephone promotion, it is worthwhile to look into the use of telephone answering service over weekends for special items.

Your windows and interior displays, coupled with vivid merchandise descriptions, and clearly-marked prices both in displays and at the point of purchase, should be developed as a stimulant to off-season sales. In slack times, all promotional factors must be exploited at the lowest possible cost. And all promotional results should be recorded weekly and monthly so that you can compare the effectiveness of different approaches.

Forming Your Promotion Plan

In crystallizing a plan for building your particular off-season sales, take a fresh look at items you already stock with an eye to new sales appeals. If you have any noteworthy items, they should be vigorously promoted at an attractive price. The proper customer approach combined

(Turn to METHODS, page 14)

Clearly-Defined Organizational Setup Termed Necessary for All But One-Man Businesses

By ERICH M. HAUER
Management Consultant
Forest Hills, N. Y.

The only business that does not need a clearly-defined organizational setup is a one-man business. Yet poor organization is all too common today in scores of businesses ranging from five to 500 employees.

"A formal organization," said one owner, "may be of value to some companies, but we are just different enough that we don't need it." That belief, however, has prevented many a potentially excellent profit-maker from staying competitive.

The typical small concern is usually a fairly accurate reflection of its owner-manager. Generally speaking, a cluttered desk in the owner's office, constant telephone interruptions, and all kinds of decisions being sought by everybody, evidence a lack of organization. Most of the time the reverse is also true. A clean or well-ordered desk, consultation chiefly with supervisors on important points (still keeping some personal touch), and the willingness to delegate in fact not just in theory, bespeak good organization.

Does "Organization" Mean Something in Your Firm?

Organization is the executive structure of a business and the interrelationship of its members. It is made up of people. That's where many of the problems develop. If it were as easy to deal with people as it is to manipulate machinery or materials, a definition of activities and lines of communications would be all you'd need. In management something more is necessary.

To illustrate: a midwest food processor got into financial difficulty. It was not a question of the partners' lack of effort, or of excessive pay. The trouble lay in purchasing. There was a chronic lack of cash caused by the fact that the partner in charge of purchasing wanted to assert his independence. Consequently, he bought whatever he wanted, whenever he thought he had a good buy. What was needed was a coordinated policy.

Do You Have A Clear Policy Statement?

A sound organization needs a clear statement of policy. The limitations and definitions of business aims are essential. Your statement need not be elaborate, nor do you have to have it in a specific form. It does have to be thought out and written down.

First, the basic aim of your business should be defined—usually it is providing a product or filling a need. Then you should specify what you want out of your business: to reach a certain size and remain there, or to aim for constant growth and diversification; to make a comfortable living for yourself or to establish a business that your heirs can carry on; to operate as a proprietorship or a partnership, or a corporation; and so on.

Are Job Assignments Spelled Out?

Once your basic policy has been set, you need a detailed written description of the assignments of executives and key people. This is one of the most important steps, if not the most important one, in keeping a business going. Each employee and supervisor should know specifically: (1) what his job is supposed to accomplish; (2) what his duties are; (3) what authority he has; (4) who his boss is; (5) who reports to him; and (6) what constitutes satisfactory performance.

This does not mean that you should tell your executives how to do their jobs—looking over their shoulders, as it were, and telling them: "Play the queen on the king." It does mean giving them a framework in which to operate and some direction for their efforts. Unless these things are plainly spelled out, and understood by the individuals involved, there can be no organization.

Have You Studied Your Executives as People?

For a good organization you also need to know more about your associates than you find out just by watching what they do. Building a team requires an understanding not only of the sort of work individuals are now doing, but also of what they can do and want to do. It is, therefore, important to enquire into the aptitudes, aspirations, interests, and values of your people. The best way of learning about these things is psychological testing. Professional help is important in this work because the layman is not usually qualified to determine which of the many available tests are appropriate, nor to interpret test results properly and draw reliable conclusions from them.

Have You Established Standard Procedures?

Next, you need to develop a clear statement of how things are to be done. The degree of detail and the exact wording, of course, must be worked out for the individual business. However, the following points are worth covering.

(1) Use of procedures. In this connection, it should be indicated that "standard procedures are for the guidance of all concerned."

(2) Changes in procedures. You might point out that "procedures are in effect now, but can be changed for good reason. However, until they are changed they must guide your actions. The following persons have authority to depart from them in exceptional cases: I. Mr. .....; II. Mr. .....;" and so on.

(3) Specific instructions and rules. These might include: "All purchases over $..... have to be approved by Mr. ..... For lesser amounts only the signature of Mr. ..... is needed on the purchase request;" or, "Partial shipments of less than 25 pieces need the approval of Mr. .....;" and so on until all regular executive responsibilities and standard routines have been covered.

In many instances, the details of item (3) above can be developed piecemeal over a period of time, but a statement of the basic procedures is a prerequisite of good organization.

Does Each Man Have Just One Boss?

For generations there has been the concept that "man cannot serve two masters . . ." It is applicable in modern conditions. The motorist who is hounded by conflicting directions from back-seat drivers finally may pull over to the curb, throw up his hands and walk away. In comparable situations in business an employee is sometimes held to his job by economic necessity. He doesn't walk away physically, but he does mentally. He loses interest in the job and his efficiency drops.

Therefore, it is important to make sure that each man has just one boss to whom he reports and from whom he receives instructions. To be sure,

Books on Pesticides

WEEDS—Second Edition (1955)
W. C. Muenscher

Entire book has been revised and reset, with descriptions of seventy weeds added to the original list of five hundred, plus twelve new full-page plates depicting nineteen kinds. Keys and full descriptions provided for identification with detailed illustrations of 331. Types and sources of weeds, their means of reproduction and dissemination, and the amount of damage they inflict on crops. Specific directions for control, with reference to chemical methods of recent discovery $10.00

CHEMICAL BUSINESS HANDBOOK
Dr. John H. Perry

1,300 double column pages, the equivalent of several average books; 700 illustrations, by 124 contributors. Market research data section is 280 pages, business mathematics 200 pages, financial and accounting 142 pages, research and development 150 pages, sales and advertising 92 pages, twenty sections in all. The book deals with chemical management problems and is useful to technical men, engineers and executives, in the chemical and allied fields. Dr. Perry is editor of the Chemical Engineers Handbook, a companion publication $17.00

INSECT PESTS OF FARM, GARDEN and ORCHARD Fifth Edition (1956)
Leonard M. Peairs and Ralph H. Davidson

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there are situations where a man works part of the time in one department and part of the time in another. If it is clearly understood by all when he works for the one and when for the other, the arrangement can work. The key to it is that the man has only one boss at a time.

Is Your Organization Charted on Paper?

Even a very small plant needs an organization chart showing the duties and relationships of each activity. Many businesses, however, attempt to operate without this formal chart. By the same line of reasoning, these concerns would move to a new location without planning where each piece of equipment was to go, or seeing to it that there were enough electrical outlets.

An organization chart showing, graphically, the relationships of your executive group, and the duties and authorities of your supervisors is important. Such a chart is the sole means by which you can get a quick, over-all picture of your management team.

This fact calls to mind a concern that went bankrupt. This firm, a plastics fabricator, was bought out by two former employees after the death of the founder. One of the new owners had been production manager, the other a salesman. They knew their field well and were competent in their jobs. Each had known the other for some time; both wanted to make a success of this enterprise. Indeed, from their point of view they had to.

SUMMARY

Organization is something small business operators are currently hearing a lot about. The term crops up constantly in the business and industrial press. To some plant owners it may sound like big business exclusively. But actually it isn't—or shouldn't be. The organizational setup deserves close attention in any concern made up of two or more people. Good or bad, it exists in all but the single-man firms. To rate your firm's organization, read the following statements. After each, check as objectively as you can the response which best fits conditions in your firm.

	No	Yes
1. The term "organization" has real meaning in your firm.	☐	☐
2. Basic company policies are clearly stated in writing.	☐	☐
3. Duties and responsibilities are spelled out in detail.	☐	☐
4. Personal characteristics have been taken into account.	☐	☐
5. Standard operating procedures have been established.	☐	☐
6. Each man has just one boss.	☐	☐
7. Organization relationships are charted on paper.	☐	☐
8. Actual company conditions are recognized and reflected in the organization chart.	☐	☐
9. The top man operates within the organization framework.	☐	☐
10. Organization structure is reviewed periodically.	☐	☐

Now give yourself 10 points for each "yes" box checked. A score of 80 and over is good, 70 to 40 is fair, and 30 or less shows a real need for improvement. Finally, after reading the whole article, re-check your answers and see if your rating would be the same. (This article was prepared in cooperation with the Small Business Administration.)

All their money was tied up in the venture.

They failed, however, to set forth in detail what their respective new assignments were to be, and what details each was to take care of. The salesman considered sales his only responsibility. In fact, he spent almost no time in the office. Since the salesman was never available, the production man had to spend more and more hours on the telephone answering customer questions and inquiries. Growing friction between the two finally caused the production man to buy out the salesman.

Since there was no ready cash, it was agreed that the salesman should be paid a stipulated, monthly amount. This monthly cash drain, plus the fact that the production man then had to handle everything including sales, proved too much for the firm. Today it no longer exists. The real cause of the collapse of this business was the lack of organization at the top level.

Are Actual Conditions Recognized?

Before you can judge your organization conclusively, you must get a clear picture of how it is actually working. Take, for example, your organization chart. The initial version may be a somewhat idealistic picture.

To bring it into agreement with real-life conditions, begin by listing the names of all employees, followed by their titles and duties. Then group together under their immediate supervisors the employees having the lowest common grade. This gives you the two bottom lines of your organization chart. On the next line above you can post the names of the individuals who supervise more than one group. Follow this approach successively until you get to the top. You may come across some borderline cases where a person might belong to more than one group. But since this is the initial step, precise placing within groups, especially in the lower lines, is not critical.

The next step is to ask your employees to write down six items of information. In small concerns of, say, 50 people of less this is quite feasible. But should your firm have too many to do so all at once, you might have it done by section or department. The six items are:

(1) What he does, including the average amount of time spent during a week on each duty;

(2) The names and titles of the person or persons from whom he gets orders or instructions on each of the above-listed duties;

(3) What suggestions and advice he gives and receives;

(4) What reports he writes (if any) and who gets copies;

(5) What reports (if any) he receives, from whom, and how the information is used; and

(6) Any other factors which are important in his job.

Emphasize that your purpose in making this study is not to downgrade anybody or eliminate any jobs, but rather to assure that the efforts of every person be put to best use and, in the long run, to benefit everyone.

After you have received these reports, sit down briefly with each person and discuss his write-up to make sure that no applicable item is left out, and that no inappropriate item was added.

After analyzing the write-ups you will be able to see where the initial chart is only an approximation of your true management organization. You may find unsuspected lines of communication between departments and between individuals. That fact in itself is not bad, but it does mean that you need to revise either your

(Turn to ORGANIZATION, page 15)

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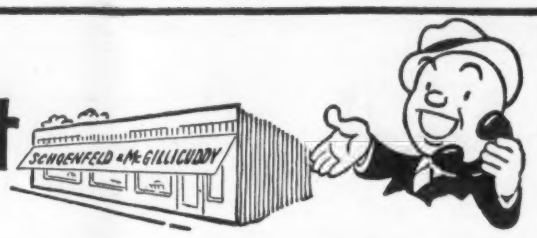


By AL P. NELSON
Croplife Special Writer

The heavy-set farmer ambled into the farm supply salesroom and approached the railed enclosure behind which bald headed Oscar sat figuring discounts. It was a task which never tired him. The farmer grinned as he sighted the green bullfrog paper clip container where Oscar put all the saved clips. He grinned, too, at the 8 ball on Oscar's methodically arranged desk, at the former goldfish bowl half filled with retrieved rubber bands, and at the sign on the wall which said, "What, You Here Again? There's Another Half Hour Gone To——"

"Hi, Oscar," he said. "Still piling up money these days?"

Oscar swung around in his swivel chair and fixed his cold eyes on Frank Peterson, a man who owed the firm money.

"Minnie and me safe something every month," he said with a touch of pride. "We neffer missed a month in nineteen years."

"I don't see how you do it," Peterson said. "With the way everything costs nowadays, a man can hardly keep his head above water. If my wife didn't work from four until midnight at the drive-in near our farm, we just wouldn't make it. All I can pay you is $65 on our fertilizer bill this month."

Oscar quickly got out a receipt book. He always moved fast when anyone mentioned paying a bill.

As he was writing the receipt, Peterson said, "Gee, that drive-in man wants my wife to work even longer, but she can't neglect the farm. She's used to feeding and waiting on lots of people. She can serve twice as many people as any other waitress. But even with me workin' the farm and her slavin' at the drive-in we can't save hardly anything to amount to much. Maybe we'll have to take lessons from you, Oscar."

"Ach," said Oscar irritably as though the saving of money should even be questioned. "Anybody can safe money, except my partner." He pointed at Pat McGillicuddy's cluttered desk.

Oscar tapped his head. "First, Peterson, you must start up here. You haf to say to yourself you are going to safe and no monkey business." He looked disapprovingly at the cigarette the man was smoking.

"Ach, there are people who smoke a package of cigarettes a day," he growled. "That's two dollars a week, eight dollars a month or almost $100 a year. In ten years that's $1,000. Andt, Peterson, $1,000 at 3 per cent is $30 a year interest besides."

"Yeah," admitted Peterson uneasily. "It mounts up, don't it?"

Oscar smiled coldly. "Then look at beer. I got friendts that buy a case of beer once a week. Costs them about $4. That's $200 a year, andt in ten years it's $2,000."

Peterson winced. "Don't tell me, I know. $2,000 at 3 per cent is $60 a year."

"See," said Oscar, "if a man don't smoke or drink, in ten years he has $3,000 to invest in a bank and gets $90 a year interest besides."

"Gee, you figure ahead, don't you?"

"Ach, I haf to," Oscar said sharply. "I safe $4,000 a year in this business watching discounts. I safe another $20,000 a year schtopping my crazy partner from spending money foolishly. I watch the money all the time. You got to do it, Peterson. That's all there is in life—be self supporting, ach, and out of debt and haf a little something on the sidt."

Peterson looked a little quizzically, "Oscar," he asked, "isn't a feller supposed to have a little fun once in a while?"

"Fun? Ach, what has that got to do with it? Your friendts will soon leave you if you run out of money and ask them for some. That's the trouble with people nowadays. They think they haf to have fun. They think the worldt owes them this and that. Ach, such foolishness. That's what makes haf the trouble in the worldt—people's crazy ideas."

"Gosh a cigarette and a glass of beer now and then makes a fellow feel happier," Peterson protested. "A man ought be able to afford a little extravagance."

But Oscar did not hear him apparently. "Ach," he said, "if every man wouldt just go out and earn a living by working hardt and pay up all his bills, and then safe a little money, this worldt would be a dandy place to lif in. But most people don't. All they want to do is spendt it as fast as they get it. But not Minnie and me."

Peterson sighed. "I wish I could save like you, Oscar, but I can't. It just isn't in me. I have to blow a buck now and then. It gives me a lift."

Oscar said sharply. "You can do it. You can do like Minnie and me. When we needt a new rug we go buy it from a storage warehouse sale. Or we go to a big hotel and buy their used rugs. The same with furniture. We safe a lot. Minnie buys the cheap cuts of meat and fixes them up. We buy cracked eggs at the chain store eight cents a dozen cheaper. We don't smoke or buy beer, andt we don't entertain. In this town I got good credit. But I neffer use it. I don't haf to. I pay cash."

"But, Oscar, you can't take it with you. Why save so much?"

Oscar grunted. "Ach, they all say that. I don't want to take it with me. I chust want to be sure I got it to pay my bills when I get ready to go. Ach, they can neffer say I'm a free loader, even at the funeral parlor."

Peterson grinned. "Oscar, if you were president of this company I'll bet you'd cut down taxes."

Oscar snorted. "Cut the taxes! Ach, I wouldt do that and more. I wouldt make every taxpayer write met a letter saying how he'd cut the corners on crazy spendting, or I would fine him $50. Then that $50 I would collect from a lot of lazy fellows I would use to pay off the national debt. Some people don't even know we got a debt. They just go on spendting."

Peterson put the fertilizer payment receipt in his pocket. "Oscar, you shore gave me something to think about. I'm goin' home and bawl out the old lady and see how it works. I'll tell her we're spending too darn much money, that we oughta save more like you and Minnie."

Oscar almost beamed. "Ach, Peterson," he said, "you are one man that has some sense. Do like I do. Then you will alright, nein?"

METHODS

(Continued from page 11)

with merchandise offerings of an attention-catching nature can give you added competitive strength.

For example, during an exceptionally dry and hot August, one small store ran a special sale of ladies' umbrellas. It featured the advertising theme: "These gay umbrellas make good parasols, too. And when rain comes, as it surely will, umbrellas are hard to find. Get yours now." Results were good.

Intelligent customer analysis, careful observation of your smartest competitors, and regular reading of trade papers are useful in this regard. They help you keep alert to current developments, new merchandise and additional uses for your existing lines.

Timing

Timing is one of the most important factors in developing maximum sales potential for any items. Promotions put on either too early or too late to do a good sales job are inefficient and wasteful. In a small store, you can't afford haphazard allocation of promotional money in improperly timed efforts. Therefore, holidays occurring during off-season periods (Arbor days, local historical days—and the like) should be coordinated with suitable merchandise offerings. There are several such "opportunity" days every month. You can develop your own calendar of such selling opportunities with the help of almanacs, your local newspapers, or the Chamber of Commerce.

Effective Methods And Ideas

Against the foregoing background, then, consider the following 20 specific methods and plans which can be used for improving off-season sales:

(1) Advance the selling season of new merchandise to the time that close-outs of season-end merchandise are started.

(2) Offer close-outs at "sacrifice" prices as early as possible—either during the initial part of your slack season or even during the closing phases of a busy season. But remember that close-out sales should not be put on for more than two weeks at any one time. Anything longer loses its sales impact.

(3) About mid-way through a slack period, start building up your new merchandise displays for the coming season.

(4) Adopt a "model stock plan" as a permanent operating technique used to make sure that fresh merchandise of appropriate assortment and price is always on hand.

(5) Cultivate "personal touch" as much as possible in all customer contacts. This can pay dividends in sales during your slack season. Customers should be treated in a courteous and friendly manner regardless of how little they buy.

(6) Use more "in-home" selling where feasible: floor coverings, appliances, television and the like, are especially suited to this approach. Trading-up opportunities are greater and sales more easily closed when "in-home" selling is carried out intelligently.

(7) In the convenience-goods field, small stores need not be squeezed out by supermarkets. There are hosts of items, especially in meats and produce, on which the small firm manager has little price competition. Among other things, for instance, "ready-to-eat" meals can be featured.

(8) A clearing house for babysitters is an excellent service device for gaining year-round store interest.

(9) Playrooms operated jointly by stores in the same sections or shopping center is a worthwhile promotional device which attracts busy young mothers. In the same vein, special open house nights with other local stores have proved helpful.

(10) Use circulars and direct mail in conjunction with advertising in neighborhood newspapers. Such material can be set up at small cost. A comparatively inexpensive dual-cylinder stencil duplicator can be used for quantity reproductions of fashion sketches and other illustrations. Basic appeals during off-seasons should generally be "value" and "price." Slack season promotions can be productive when the "value" aspect of merchandise—at a particular time—is suitably stressed. "Best price" items should be attractively and prominently displayed so that they may be easily recognized.

(11) Develop programs of "related merchandising" and use them extensively. For example: men's jewelry with shirts and ties; gloves with mufflers and belts; and handkerchiefs with sportswear.

(12) Prize contests can also be sales builders. For example, a free prize may be given to each hundredth customer (100th, 200th, 300th and so on), with names of winners posted weekly in your show windows or inside the store and prizes selected from the merchandise being featured.

(13) Dawn-to-midnight promotions often work well in shopping goods stores.

(14) Gifts for newly-weds and new parents who live in a store's trading area are sales boosters. Along this line, smaller stores should not hesitate to sponsor a "welcome wagon" for newcomers to the community.

(15) If you carry merchandise eligible for home improvement loans, you should insist that all salespeople know the details. Loan terms and repayment schedules are important parts of the sales picture.

(16) Ask your customers what they would suggest to improve off-season service, assortments and attractions.

(17) Put new emphasis on personalized tags, labels, boxes and wrappings.

(18) Use "bargain tables" regularly in all slow periods to offer unadvertised specials. When consistently presented, this merchandising technique can be an effective builder.

(19) Offer merchandise guarantees regardless of price.

(20) Encourage customers making purchases of shopping and specialty goods to register their names on a purchase-record card. Having such a card is a great asset in developing an up-to-date, personalized mailing list for promotional material. For example, you can send birthday and other personal greetings in addition to announcements of sale.

Non-Price Competition

In today's market, many stores carry similar lines of merchandise. As a result, non-price competition becomes important. When price differences cannot be great, and where convenience of location is comparable, customers will shop in the stores having the best appearance and service. Therefore, it is important to build long-term patronage motives which keep customers coming back during your slack seasons because they like the store.

Essentially, each store owner, during slow selling periods, is in competition with consumer resistance. This resistance is not directed against your store during such periods; it is rather a reflection of the fact that consumers' interests are oriented in other directions. When you provide articles which have genuine news, price, value or impulse attractions, you stand the best chance of stimulating greater selling activity. But you have to develop over-all improvement of off-season sales through planned promotions of your store as a place to shop throughout the year. This, plus intelligent coordination of specific promotional techniques mentioned above, should prove helpful in improving off-season sales.

SHOP TALK

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Point-of-sale advertising is a merchandising tool which has been proven to be effective in increasing turnover, creating impulse buying, reminding the customer that he needs a certain item, boosting related item purchases and dressing up a retail store, both outside and inside.

The outside appearance of the store, along with proper identification, makes a definite and distinct impression on the customer. This impression may invite him to come in the store or impel him to go to the competitor's store which is more appealing.

Once the customer is inside the store, how does he feel about your store? An attractively merchandised store is pleasant to shop in and gives the feeling that it is an exciting place in which to buy.

The farm supply dealer, in determining how he can make better use of point-of-sale advertising and materials, must realize that his customers seldom come into the store with a list of items to buy. The customer may have in mind to buy only one item—a weed killer, a shovel, grit or twine. But, assuming there's money in the customer's billfold, other merchandise which is attractively displayed may strike the customer's eyes. Point-of-sale material can produce an extra sale in many cases.

Point-of-sale advertising can also do an excellent selling job during rush periods when salesmen are busy and unable to answer questions in detail.

Point-of-sale materials also help farm supply stores overcome the look of sameness week after week. By using banners, dump bins, gondolas and floor and counter signs and shifting them around, the look of sameness can be avoided. The changing seasons make a change in displays necessary, too.

Although point-of-sale materials are helpful no matter what main lines are handled by the dealer, they are of special importance for self-service items. The farm store with adequate display space and a wide variety of lines will be able to make more and better use of point-of-sale displays than the country elevator which may have a small sales room. In the latter case the operator may be able to do more personal selling.

The effectiveness of merchandising displays is shown by an example in which test supermarkets displayed glass pack vegetables. When they were displayed in test stores, the average sales increase was 46.9%. When the same product was advertised with no in-store display, the average sales increase was 31.2%. When the product was both advertised and displayed, sales went up a hefty 239%.

This survey also tried to determine what happened to the sales of other canned vegetables. Sales of other vegetables not displayed went up 3.5%. Those displayed but not advertised went up 3.6%. When both advertising and display were used, the total product group sales increased 12.3%.

This survey showed that one brand displayed will not necessarily take sales away from another brand in the same product group. There appears to be an interplay of impluse and reminder buying and an awareness created by displays.

Perhaps the most important impact which can be created by point-of-sale material is that of tying in with national or regional promotions of manufacturers. This tying-in of the dealer with his supplier's magazine, newspaper, radio and television advertising, using his advertising materials for local distribution and setting up point-of-sales material make the entire promotion quite effective in nearly all cases.

ORGANIZATION

(Continued from page 13)

organization or your chart. Only in this way can you determine how far your actual organization conforms to what you think it should be. Naturally, you must apply good common sense to "what you think it should be."

Does the Top Man Operate in Organization Framework?

Effective organization develops from the top down. It has to start with the boss. If he refuses to "play by the rules" he has set up for the business, others will soon have little respect for them. Therefore, it is essential that the chief executive know the organizational set-up, that he act in accordance with its relationships and procedures, and that he insist that others do so, too.

Employees, supervisors and executives in most businesses, even where there is transient labor, are eager for less but better supervision. Almost everyone wants to do a good job and turn in an honest day's work. However, it is unfortunately true that management often holds people back. Much of the time, complaints in small business about shortages of money, sales falling off, excessive personnel turnover and similar difficulties can be traced to poor organization for which the top man can blame only himself.

Do You Review Organization Structure Periodically?

In small business management, organization means people in actual jobs. It is simply a method of trying to set up the most productive relationships of individuals and tasks. In time, both elements change. Therefore, make sure that you have some provision for reviewing your organization periodically—say, once every six months or each year. Where conditions have changed, revisions should be made sooner. These should be worked out carefully and put into effect quickly. An organization plan which has become a strait jacket can be worse than having no plan at all.

EMPLOYEE STOCKS

MIDLAND, MICH. — The Dow Chemical Co. has announced a price of $55.75 per share on an issue of 175,000 shares of its common stock to be offered its employees and those of its subsidiaries and certain associated companies. Approximately 28,000 employees will be eligible to subscribe for stock under the 1958-59 employees' stock purchase plan, the tenth since 1948 offered on a payroll deduction basis.

What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

The city of Baltimore will allow fertilizer grade ammonium nitrate to move freely through its port. That's the gist of an ordinance compromise brought about at a special hearing there, Nov. 10.

United Heckathorn Co. of Richmond, Cal., is opening its first agricultural chemical manufacturing plant at Magna, near Salt Lake City, Utah.

The Tennessee Valley Authority said Nov. 12 that it has discontinued the manufacture of concentrated superphosphate containing 48% plant nutrient, and is engaged in perfecting a process for the manufacture of superphosphate of a higher concentration.

Although the U.S. Department of Agriculture says in its November Demand and Price Report that "some reduction in realized net income appears to be in prospect" for farmers in 1959, this report must be diagnosed by crops and areas, said John Cipperly, Croplife Washington correspondent.

A new method of incorporating calcium cyanamid into soil shows great promise of increasing the chemical's effectiveness in controlling annual weeds, according to two University of California scientists.

More than 300 representatives of the fertilizer manufacturing industry heard thorough-going discussions on production techniques, equipment and the economics of preventive maintenance during the three-day fertilizer industry round table at the Mayflower Hotel in Washington, D.C.

Arizona Fertilizers, Inc., Phoenix, completed construction of a $50,000 emulsifier plant for the blending of liquid insecticides at its Yuma, Ariz., branch. Machinery in the 5,000 sq. ft. plant has a production capacity of about 1,000 gal. per hour and storage facilities for about 10,000 gal.

A description of the program conducted by the National Plant Food Institute in the Southeast, a talk on the merits of soil testing and a panel discussion on a soil fertility program carried on with farmers in two North Carolina counties comprised a large portion of the Southeastern Fertilizer Conference held at the Biltmore Hotel in Atlanta, Ga.

"There are no short-cuts, push-buttons or ready-to-wear solutions" to the problems of the agricultural chemical industry, Frank S. Washburn, general manager of the Agricultural Division, American Cyanamid Co., declared at the closing session of the 25th anniversary meeting of the National Agricultural Chemicals Assn. in Savannah, Ga.

An attempt by the Minnesota Farm Bureau Service Co., St. Paul, to express fertilizer ingredients in elemental terms rather than on an oxide basis is meeting with little reaction on the part of the firm's customers.

North Dakota Nitrogen, Inc., of Bismarck, N.D., announced it had awarded a contract to the Chemical & Industrial Corp., Cincinnati, as consulting and construction engineer for a fertilizer plant in the Bismarck area.

Members of the National Agricultural Chemicals Assn. took a long look at 25 years of growth and progress in the pesticide field during the group's silver anniversary convention here Oct. 29-31—then more than matched the story of the past 25 years with some searching looks into the next 25 years. About 600 attended.

A panel discussion on accident case histories; the value of safety training in plants; safe handling of ammonia and solutions; and a clinical examination of the accident-prone individual made up an important part of the two-day annual meeting of the Fertilizer Section, National Safety Council in Chicago, Oct. 20-21.

An intensive effort to eradicate witchweed, a parasitic plant that attacks corn and some other crops, is getting under way in North and South Carolina, the U.S. Department of Agriculture announced.

A total of 1.9 million short tons of marketable potassium salts were produced in the U.S. in the first half of 1958, the U.S. Bureau of Mines reported. This tonnage contained 1.1 million tons of K_2O equivalent.

The Association of American Fertilizer Control Officials and the Association of American Pesticide Control Officials urged that defoliants, desiccants, plant regulators and nematocides should be brought within the scope of the Federal Insecticide, Fungicide and Rodenticide Act. The resolution was made at the two groups' annual meeting in Washington, Oct. 17 and 18.

The Association of American Fertilizer Control Officials, at its annual meeting, recommended that the taking of fertilizer samples be done at the individual fertilizer plants.

A conference on chemical control problems with emphasis on methods of analyzing fertilizers for determination of moisture, free acid, available P_2O_5 and other content, was held in Washington, Oct. 16.

Hugo Riemer was named executive vice president of U.S. Borax and Chemical Corp., following a meeting of the board of directors in New York.

Prices paid to farmers advanced 2% in the month ended Sept. 15, USDA announced. This forward move was a surprise to many economists who had not expected to see a favorable rise at this time.

The number of cotton acres fertilized each year is second only to the corn crop, according to a USDA survey. Of 19 million acres of cotton harvested in 1954, year of the survey, 58% had received fertilizer.

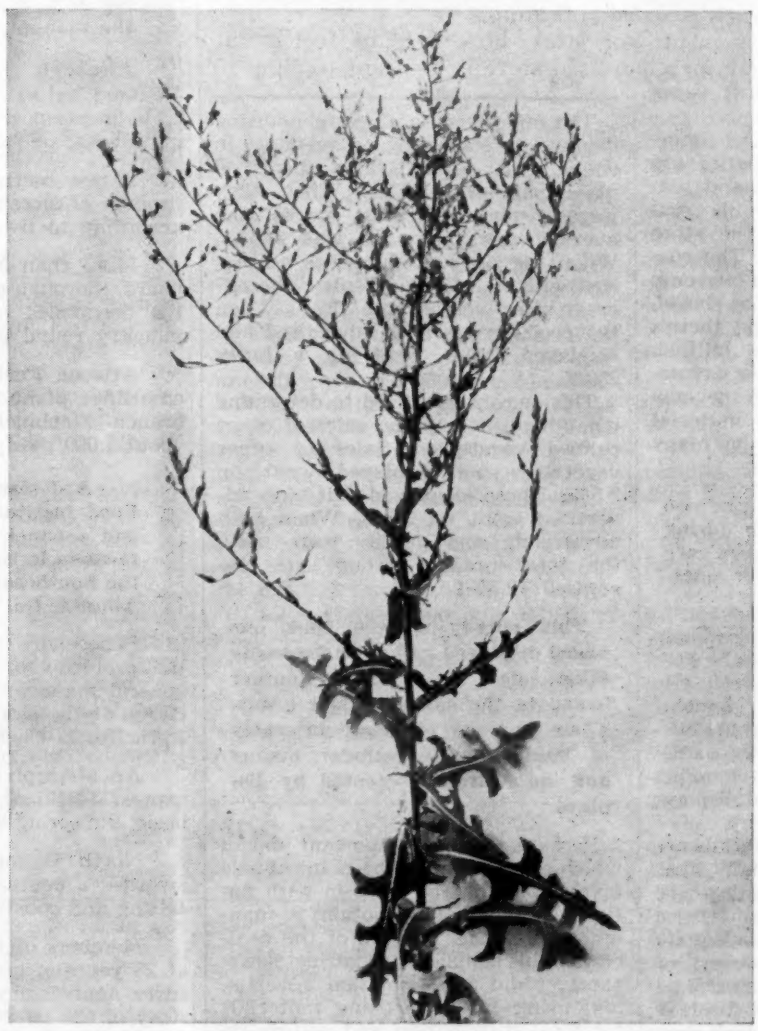
SunOlin Chemical Co., a joint subsidiary of Olin Mathieson Chemical Corp. and Sun Oil Co., was formed. The new firm will produce urea. James I. Harper of Sun Oil is president, and S. S. Johnson, Olin Mathieson, vice president.

Hercules Powder Co. announced that its new plant at Hercules, Cal., is producing urea in commercial quantities. The plant has a capacity of 20,000 tons a year.

WEED OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board

Prickly Lettuce



How to Identify

This plant is tall, erect, standing from 2 to 6 ft. in height. It is described as being stiff, leafy, hollow, prickly on the lower part and containing milky juice. Leaves are large and coarse; lower leaves are more or less lobed, the upper ones small and linear, all with prickles along margin and along center of lower surface of midrib. The plant is found usually in roadsides, fence rows and in wasteland.

Damage Done by Prickly Lettuce

While not a troublesome weed in cultivated fields, prickly lettuce is prolific in meadows and waste places and must be either cut or otherwise controlled several times during the year to prevent its seeding and thus propagating itself. Prevention of seeding is also helpful in preventing the presence of seeds of this unwanted plant among the seeds of small legume and grass seed. Horses, cattle and sheep are fond of the prickly lettuce and will graze on the plants if they are available in pastures.

Habits of Weed

Prickly lettuce is an annual or winter annual, reproducing only by seed. It is described in various sources as being a naturalized European weed, and contains a milky substance which accounts for its sometimes being known locally as "milkweed," an inaccurate designation.

Control of Prickly Lettuce

Some herbicidal chemicals are effective in killing this plant, but the mature plant is resistant to some. However, immature plants readily succumb to sprays of 2,4-D, for instance, and can be controlled if treated early in the season. Cultural means of control include cutting several times a year to prevent seeding, as noted above. If an area should become heavily infested with the weed, plowing it under is mentioned as a means of stopping its progress.

Illustration of Prickly Lettuce furnished through courtesy of Dow Chemical Co., Midland, Mich.

SOLUTIONS ASSOCIATION

(Continued from page 1)

lacks details; (2) information, when interest develops, the farmer gets facts and sees possibilities; (3) evaluation, the mental trial stage; (4) trial, the time of experimental use, and (5) adoption.

The two professors also discussed their classification of farmers on the basis of acceptance of new ideas:

The Innovators, who are first to adopt, the most active and usually the best farmers with large acreage.

The Early Adopters.

The Early Majority.

The Majority.

The Non-Adopters.

Generally, going up this scale from non-adopters to the innovators, farmers have more education, are more active in community affairs, farm more land and are thought of as better farmers.

An interesting note here is that, according to the research of Dr. Beal and Dr. Bohlen, the innovators are not named generally as a source of information by other farmers. Mentioned most as friends and neighbors looked to for information is the early majority classification, which comprises the informal leaders of the community.

George H. Serviss, GLF Soil Building Service, Ithaca, N.Y., association secretary, presided over the session Nov. 17.

E. E. Crouse, C. D. Liquid Fertilizer Corp., Liberty, Ind., executive vice president of the association, talked about the association and its values to the members during the Nov. 18 morning session.

As long as every member of the association does his best job for his customer, the liquid fertilizer industry will assume an increasingly important role in American agriculture, he said.

Dr. Samuel N. Stevens, Stevens, Thurow & Associates, Chicago, in talking about the changing economic society and its challenge to business leaders, said that Americans perhaps are getting too accustomed to crisis.

He spoke about what he called crisis in social and economic affairs, in cultural matters, in knowledge and in moral and spiritual life. Getting too accustomed to living under the pressure of these crises, he said, brings the risk that Americans do not recognize the great dangers in them and will become too complacent about serious problems.

He called men, money and machines the legs of a 3-legged stool, and declared that in the long run, human costs are more important to business than is material cost.

Scott Hall, department of biochemistry, Purdue University, described the sampling methods and procedures used in Indiana for liquid fertilizers. He noted that Indiana uses more plant food nutrients than does any state. He said that in Indiana there are 67 anhydrous ammonia installations, 21 complete liquid mixing plants and between 80 and 90 distributors and dealers of nitrogen solutions and liquid mixes.

John L. Wilson, Semo Liquid Fertilizers, Inc., Charleston, Mo., association treasurer, presided at the Nov. 18 morning session.

In the afternoon a panel discussed production equipment, application equipment, production and inventory control and standardization, under the title, "Planning for Profits." William B. Parrish, Auburn, Ill. dealer, association vice president, was session chairman, and Mr. Crouse was panel moderator.

William W. Arnold, Allied Chemical Corp., Indianapolis, talked about production equipment. The materials used in this equipment are exposed to many highly corrosive materials, he said, which sets up the problem of whether to use non-corrosive materials at the higher initial cost.

One factor which might tip the scale in favor of the non-corrosive materials, he said, is the seasonal aspect of the industry which makes it critical not to have equipment breakdown during peak output periods.

The choice between weight and volumetric measurement is not affected by temperature, while volume measurement may be, Mr. Arnold said.

He also advised the group not to overlook use of air pressure to move liquids, particularly in transfer from storage. Factors, other than cost, which influence choice of material for tanks, he said, are resistance to corrosion, resistance to heat, strength, ability to stand internal pressure, lightness of weight and ease of cleaning.

F. E. M. Chester, Schelm Brothers, Inc., East Peoria, Ill., discussed application equipment. He said that the initial cost of such equipment was not the most important factor in its selection, and that the equipment should play a major part in the education and promotional program of a distributor.

Two things now are "holding the industry back," he said. "Customer confusion caused by too many experts" and failure to make available a "supermarket of services, then letting the customers know you've got it."

In discussing production and inventory control, Stewart D. Daniels, Monsanto Chemical Co., St. Louis, said that things to consider in formulation are accuracy of formulas, using the lowest-cost goods consistent with quality desired and being sure that the formulations can be made throughout the entire season.

In inventory control, he said, there is the theoretical inventory, which consists of a ledger sheet tally. This should be backed up by physical inventory, which can be made with sight gauges, dip sticks or floating mechanisms.

Mr. Daniels said that if a plant is attempting to turn out 3,000 tons of 8-8-8 and makes 8½-8½-8½ instead, because of faulty controls, it loses $6,000. He also noted that to carry a 500 ton inventory for six months costs $500.

Donald Weber, Spraying Systems, Inc., Bellwood, Ill., summed up his topic of standardization with the comment that "the only standard is a lack of uniformity."

The conference closed with a banquet the evening of Nov. 18 at which Dr. James Hays, Michigan State University, was the principal speaker.

NFSA OFFICERS

CINCINNATI—O. L. Ohnstad, Ohio Liquid Fertilizer Co., South Solon, Ohio, was elected president of the National Fertilizer Solutions Assn. at its annual meeting here Nov. 16-18. He succeeds Richard Cecil, Artlett & O'Bryan Fertilizer Co., Owensboro, Ky. Other 1958-59 officers are Hugh S. Surles, Jr., Planters Cotton Oil & Fertilizer Co., Rocky Mount, N.C., vice president; John L. Wilson, Semo Liquid Fertilizers, Inc., Charleston, Mo., who was reelected treasurer, and Edward A. Wex, Badgerland Liquid Fertilizer Corp., Milwaukee, secretary. Six new directors also were elected. They are Mr. Wex; Hubert Johnston, Me-Jon Fertilizer, Inc., Oxford, Iowa; Dean R. McHard, Kaw Fertilizer Service, Lawrence, Kansas; Donald J. Humphrey, Flo-Lizer, Inc., Kingston, Ohio; August I. Balzer, Ok-Tex Chemical, Inc., Lubbock, Texas, and Joseph Gillespie, Standard Steel Mfg. Co., Inc., Indianapolis.

Florida Horticulturists in Three-Day Session Discuss Pest Control, Soil Fertility

CLEARWATER, FLA. — The nation's oldest horticultural society held its 71st annual meeting at Clearwater, Fla. Oct. 29-31. Seventy-one staff members of the agricultural divisions of the University of Florida plus numerous other experts on various horticultural subjects brought the number of speakers to well over one hundred.

Divided into five sections, the meeting's topics included citrus, vegetables, ornamentals, processing, and the Krome Memorial section. (The latter dealing primarily with subtropical and comparatively rare fruits.)

A number of the 19 papers presented in the vegetables section covered problems dealing with insecticide seed treatment, pesticide residues, and control of viruses affecting fruits and vegetables.

Emmett D. Harris, Jr., Everglades Experiment Station, Belle Glade, Fla., said that experiments showed promise for a solution of methyl cellulose with heptachlor and dieldrin in protecting young corn plants from wireworm attack. The heptachlor and dieldrin 75% wettable powders were coated on sweet corn seed at 8 lb. actual toxicant to 100 lb. of seed, the speaker said.

William Lautz, USDA, Central Florida Experiment Station, Sanford, Fla., said that significant chemical control of nematodes in sweet corn field soil was shown by the use of a Nemagon emulsion containing 4 gal. active ingredient an acre.

Other chemicals showing promising results were Tellone, Mylone and PRD. When the treated plots were compared with control plots after 4 and 8 months, the parasitic nematode population was still significantly lower, the report said.

J. F. Darby and P. J. Westgate, from the Central Florida Experiment Station, Sanford, reported on the use of lithium as a fungicide on celery. Lithium compounds applied to the soil were said to be taken up by the celery plants and acted as a systemic fungicide against early blight. Some stunting of plants was noted when applied at higher levels, however.

Dilithium ethylene bisdithiocarbamate at the rate of 1 qt. to 100 gal. and lithium dimethyl dithiocarbamate at 2 qt. per 100 gal. were found to be almost free of any phytotoxicity when used on celery plants as a spray. The former gave better control of late blight than the latter, the speaker said.

Dilithium ethylene bisdithiocarbamate was about equal in disease control to Nabam plus Zn SO_4, but celery plants treated with the latter yielded better. In a field trial the yield of 8 treatments was nearly twice that of untreated plants.

G. M. Volk, Agricultural Experiment Station, Gainesville, Fla., reported on the effect of urea nitrogen on nutritional leaf roll of tomatoes. He said that nutritional leaf roll was not present where a nutrient solution supplied from nitrate nitrogen was used, but that it would occur where some other forms were used.

R. M. Baranowski, Sub-Tropical Experiment Station, Homestead, Fla., reported on the control of serpentine leaf miner on pole beans. He said that Diazinon was found to be the most effective of several dust formulations.

Dr. C. H. Van Middelem, Agricultural Experiment Station, Gainesville, Fla., reported on experiments conducted to determine the pesticide residue on corn and salad or "greens" vegetables. He said that after as many as 15 daily applications on corn, the residue of DDT and parathion on corn kernels and cob was well below the proposed official tolerances three days after the last application.

"Therefore," he said, "there appears to be no danger of excessive residues to the ultimate sweet corn consumer. However, DDT residues were relatively high on the outside husk, and the feeding of DDT treated sweet corn waste to hogs, dairy or beef cattle should be discouraged."

Because of the emphasis placed on the potential residue hazard on leafy types of commercially important vegetables, well over a hundred separate pesticide experiments were completed on vegetables in this category. These tests involved about 20 different vegetables and as many separate pesticides. The results of the tests are too lengthy to list, but it was concluded that the pesticides now in use are perfectly safe if the growers follow the manufacturer's label instructions and the latest recommendations from the Florida Agricultural Experiment Stations.

For his work in this field, Dr. Van Middelem received the annual Research Award presented by the Florida Fruit & Vegetable Assn.

Numerous other papers were presented regarding nutrition, control of pests, and processing of citrus and Florida fruits and vegetables.

At the conclusion of the meeting, Prof. S. J. Lynch, head of the University of Miami's Experimental Farm, was elected new president of the society, succeeding Dr. A. F. Camp of Lake Alfred, Fla.

DISTRIBUTING FIRM

FRESNO, CAL. — The Westside Fertilizer Co. has been incorporated in Fresno to produce a line of agricultural fertilizers for distribution in central California. Directors of the firm, capitalized at $75,000, include Howard B. Thomas, Charles E. Small and Roger E. Fipps, all of Fresno. Offices are in the Helm Bldg., here.

Arden E. Malzahn

NEW SALESMAN—Arden E. Malzahn, Minneapolis, has been named sales representative for Tryco Manufacturing Co., Inc., Decatur, Ill., in the Minnesota, Wisconsin and northern Iowa areas. Mr. Arden is a University of Wisconsin graduate and has a background of sales and development work in the agricultural equipment field.

FOREIGN RESEARCH

(Continued from page 7)

variety of organizational patterns exist in which there are exercised varying degrees of central coordination of the agricultural research work carried out in countries.

The highest authority for the administration, supervision and even the guidance of agricultural research everywhere in Europe is a governmental department such as the ministry of agriculture, the ministry of education and the ministry of the interior or other ministries (ministry of monopolies, ministry of economics), or a particular high-ranking and more or less autonomous governmental authority which serves as a central research organization.

In most cases it is incumbent on the same authorities to obtain the funds through appropriate legislation and to manage the financing of the research institutions which they control. However, there are few countries where there is only one such central authority. In most countries the agricultural research institutions are divided into groups and different authorities are responsible for each of these groups.

The explanation lies in the historical development of agricultural research. In most countries, all scientific investigation was at first closely linked with teaching, and both activities were carried out at universities or at the superior schools of agriculture. In some countries, this situation still exists. In a great number of countries, however, when agricultural research became more and more important, and increasingly specialized, a great part of agricultural research work was transferred to particular and specialized research institutes which were independent of the university faculties.

Since in most countries, the ministries of agriculture were responsible for the promotion of agricultural development, it also became their task to set up, administer and control such institutions. In countries where there are no ministries of agriculture and this charge was the responsibility of another ministry (Ministry of Economics or another governmental department), this task was carried out by this ministry and became its continuing responsibility.

There are also some countries where particular branches of agricultural production are controlled by ministries other than the ministry of agriculture. Thus, for instance, tobacco production is promoted and controlled by the ministry of finance or of monopolies in some countries. Research work in these specific fields became, therefore, the responsibility of these governmental departments.

However, while these developments were taking place, research work continued in the university faculties and since these faculties, in certain countries, are controlled by the ministry of education on the highest level, that ministry became the responsible authority for that part of agricultural research carried out in the research institutes attached to universities.

Another type of development has taken place in some countries where, with the increasing demand for scientific research, it appeared advisable to entrust a special body with its organization and with the coordination of the work done in the various research institutions. This solution was chosen in fields of activity where the promotion of scientific research was important: industry, medicine, etc., and special organizations were created and entrusted with the promotion of scientific investigations. In countries where such organizations were established, scientific work in the field of agriculture was also entrusted in some cases to such special central research organizations. Gates (1958) has recently presented an interesting account of the over-all status of basic research in Europe.

The task assigned to these central organizations is multiple and varies from country to country. One important task is the coordination of research work on a national level. Generally, these organizations also have to review all research activities and to fill gaps if such gaps exist. To enable the organizations to do this they are provided with special funds which give to the central organizations the possibility of setting up research institutions under their own control. Thus, in many countries new groups of research institutions were established under the central research organizations.

Agricultural Progress In Central America

Let us turn now to another region, the Central American countries, Panama and Mexico, where by comparison with much of Europe, the development of agricultural research can be traced only through decades rather than centuries. During the past decade in particular, effective agricultural research programs have been gaining prominence in the seven countries lying between the Rio Grande River and South America.

Impetus to research was given by the U.S. in its World War II program relating to basic and strategic crops through cooperative agreements with some of the governments during the early 40's. About the same time the Rockefeller Foundation and the government of Mexico launched the Mexican agricultural program based on scientific research. In 1942 the convention was signed for the establishment of the Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica.

The writer had the opportunity in December, 1955, of participating in an FAO meeting on the organization of agricultural research in the five Central American countries and in Panama and Mexico (FAO, 1956). Among other things, we examined the organizational structure of the ministries of agriculture which conduct most of the government-financed research other than that conducted at Turrialba for the benefit of all the countries participating in the institute.

Although there is considerable variation in detail, the general pattern includes centralized control under a minister of agriculture, and with subject-matter services or departments carrying out research and other functions under the supervision of the minister and his immediate staff. The support given by ICA in most countries, and by the Rockefeller Foundation in Mexico is integrated into the ministerial structure according to the terms of the agreements with the respective governments.

The pattern of research organization that has developed in various parts of the world naturally bears some relation to the systems under which the leaders who guided the development were trained. Thus, it is not surprising to find that the organizations in Australia, India and New Zealand are similar in many respects to that of Great Britain, and that the patterns chosen in the Central American countries, Mexico and Panama, reflect the proximity of the U.S., the fact that many of the leaders were sent here for training, and also the fact that U.S. workers have been advising the governments as their agricultural research programs developed.

Much more could be said about the organization of research in different parts of the world, but I shall now turn to the wide variations in the physical, social and economic environment in which research must be conducted. What are some of the main reasons for these variations?

One basic reason is the lack of resources on the parts of farmers and of countries to support adequate research programs. In China, for example, the farmer in the rice area of the south had to make a living for himself and his family on approximately three acres of land, according to the study Buck reported in 1937. In the northern portion of China, where wheat is the main food crop, the average farm consisted of only a little over five and one half acres.

Population increases may have caused reductions in the size of farms since that study was made. In any event, the farmer with so little land has a constant struggle to feed himself and his family and to sell a little to buy the necessities he cannot produce; he can contribute little to research or to other programs designed to serve him.

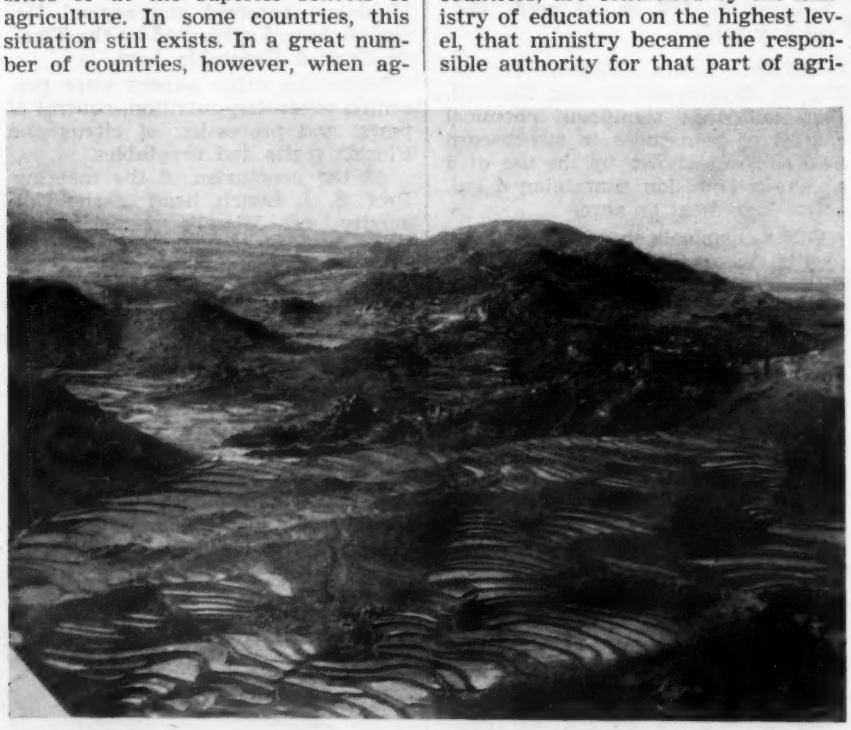
Agricultural leaders in many countries, faced with a lack of finance, have hoped to dispense with the need for research of their own, and to make progress by applying the results of research in other countries. This approach does offer some possibilities, but often the results of research are not satisfactory when applied elsewhere. Thus by following this line of thinking, political and agricultural leaders frequently delay progress in developing needed research in their countries.

Lack of trained personnel is another important factor. In underdeveloped countries, it is often the son of a business man or a lawyer or some other city dweller who takes a degree in agriculture, while the farmer's son is seldom able to do so. Thus, many leaders in the agricultural field do not themselves have first hand knowledge of farming and its problems.

Countries still exist which have only two or three men, or at the most a small handful of men, having the equivalent of a bachelor's degree in agriculture. In such circumstances it is difficult to develop any kind of government service for agriculture, least of all an effective research service.

The lack of a scientific tradition in any field, and particularly in agriculture, is reflected in the customs and even in the languages of many countries. Some languages, even those such as Chinese and Hindi which are used by hundreds of millions of people, often lack the scientific terms necessary to an understanding of modern agricultural developments. Because of this, English, German, French and other terms show up frequently in technical writings in the languages of many underdeveloped countries, and in discussions among their trained agriculturalists.

This lack of a scientific tradition and the lack of adequate mechanisms for bringing new information to the farmer, often combine to prevent rapid development of research. There are countries among those classed as underdeveloped where fine, well staffed research institutes exist, but where few of the results of research find their way to the farmer. A country may have excellent facilities for research in rice breeding, and have



FAR-AWAY AGRICULTURE—Top picture, terraces of the type which for centuries have been used by farmers in the country of Yemen to enable them to cultivate the hillsides of their country. Lower photo: a yak cow being milked by a Tibetan woman on a summer pasture near Kokonor. The elevation at this point is about 11,000 feet above sea level.

excellent varieties available, but only a small percentage of the rice area may be planted to these improved varieties. This reflects the lack of an effective extension service, the lack of good commercial channels for seed multiplication and distribution, lack of funds with which to buy seed, and other factors.

Fertilizer Needed

One of these "other factors" may be the unavailability of fertilizer at prices the farmer can afford to pay. Japan has based its rice breeding program on the development of varieties that respond well under conditions of good fertility. The farmers have access to fertilizers and use the improved varieties to good advantage.

In a country where commercial fertilizers are practically unknown to most farmers, such an approach could not succeed. In this connection, it is worth noting that in the "fertilizer year" 1955-56, when the world consumption of plant nutrients (N,P_2O_5 and K_2O) was 19.4 million tons, 16.9 million tons were used on a little more than one third of the world's agricultural land in western Europe, the U.S., Canada, Japan, Australia and New Zealand, while only 2.5 million tons were used on the remaining nearly two thirds which is distributed over the greater part of Asia, Africa, Latin America and eastern Europe.

It often happens that, even though a man from an underdeveloped country has received good basic training and has good facilities with which to work in his country, he has received his training under quite different conditions and has not been made fully aware of the need for adapting what he has learned to conditions in his own country. This applies particularly to men from the tropics and subtropics and perhaps to a lesser degree to those from semi-arid regions.

When men from such areas go to the best institutions overseas, they often find themselves studying in temperate areas where soil, rainfall and other factors make possible a highly productive agriculture. The professors, interested in the problems of their own areas, expect the foreign students to fit into the general pattern of training they have designed for local students. So it happens not infrequently that a man receives an advanced degree without gaining much understanding of how to apply the basic things he has learned in his own quite different environment.

There is the classic example of the Chinese student who studied forest products at a northwestern U.S. institution and returned to his homeland intent on only one thing—the establishment of a forest products research laboratory, in an area which had no forests!

Let me cite another, more recent example. Something over a year ago a special course was arranged at an American institution for overseas students. Particular attention was given to the analysis of problems in their respective countries. Several of the participants, who had been brought together from various graduate schools, expressed great appreciation for the course and indicated that this was the first time their own problems had been brought to the forefront in their training.

This leads me to the subject of the variations in the physical conditions under which research must be conducted. We live in a large and varied country. Many examples of variation could be cited that are familiar, such as the semi-arid grazing areas of Arizona and New Mexico where only grazing livestock can harvest the grass crop, the very different grazing areas of the subtropical region bordering the Gulf of Mexico, the bluegrass pastures of Kentucky, the rich soils of Iowa and other Corn Belt states, the highly productive dairy farms in Wisconsin, or the high mountain pastures of the West, the wheat fields of Oregon. These are some of the variations in the problems faced by research workers in our own country.

Soil Fertility Problems Differ by Localities

Suppose we start with the soil. The problems of the soil scientist who works with rice soils, such as those of Indonesia and China which are under water much of the year, are very different from those of the soil scientist who works with soils where dry farming or only intermittent irrigation is practiced. Obviously, different methods are required.

The agricultural engineer is also faced with widely varying problems if he tries to design machines for harvesting rice from small fields in Japan, to find a way of replacing the traditional threshing of grain by treading with a simple thresher, to develop a simple weeder for use in the rice field. Or perhaps to develop an economic method of artificial drying of hay in Sweden or other Scandinavian countries where summer rainfall is often heavy, or to find a replacement for the primitive devices still used extensively for the lifting of water in Egypt and other Near Eastern countries. Such problems are quite different from the engineering problems of a highly mechanized agriculture such as that in southern England or the U.S.

The livestock breeder must also try to improve his stock under some widely differing environmental conditions. Consider the problems of the researcher who might try to improve the yaks of Tibet, the llamas of Peru, the water buffaloes of India, the Ongole cattle of India transplanted to the sub-tropical portions of Brazil for beef production, the camels of Afghanistan that are still an important part of the transportation system, the fat-tailed Mongolian sheep of Asia, the Highlands Cattle of Scotland with their sparse mountain grazing, and the working cattle of India, compared with those animal breeders who work with the highly productive black and white cattle on the lush pastures of the Netherlands or the English and Scottish breeds of beef cattle transplanted to the pampas of Argentina.

One quickly encounters a wide variety of nutritional problems and problems of animal climatology, as well as variations in the uses to which the animals are put, which the breeder must take into account.

The researcher who concerns himself with other fields, farm management for example, is also faced with widely varying sets of circumstances. Here are a few: the farms of Finland where practically every farmer is also a forester, the mountain farms of Austria and northern Italy, the grazing areas of Libya, small farms in the well-watered highlands of Ethiopia, the coffee growing areas of Central America, Indian farms in the Andean highlands of Peru, cattle ranches in the frequently burned-over areas of New Caledonia, the rich farms of central Germany, the terraced hillsides of southern Italy, and the mountain farms and dairies of Switzerland.

One could multiply, almost without end, the number of illustrations of variations with which the agricultural research worker must deal. However, these are certainly adequate to illustrate the point that, no matter how well he is trained, the research worker is often called upon to adapt his basic knowledge to a wide variety of problems and to carry out his work in circumstances far different from those in which he may have received his training.

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USDA Uses Balloon-Riding Insects to Study Effects on Life of Heat, Cold, Radiation

WASHINGTON—Insects, sent into the stratosphere on Navy balloons, are helping U.S. Department of Agriculture scientists find answers to some of the space-flight riddles brought about by recent advances in rocketry.

Studies are now being made of insects surviving three U.S. Navy balloon ascensions earlier this year. These flights reached altitudes exceeding 15, 18½, and 24½ miles.

Because of their small size and light weight, insects are useful for experiments to test survival of organisms in outer space. Many thousands of insects and spores can be included in a single one-pound package. Also, insects can stand tremendous decompression and their chances of survival at extreme altitudes are far greater than those of higher animals. As most species of insects produce several generations each year, the effects of space travel on genetics —the ability to reproduce normal insects or mutations—can be determined.

Hazards of space travel include cosmic, X, and ultraviolet radiation, in addition to very low air temperatures and pressure. Insects returning from the balloon flights are tested for mortality, sterility, and genetic mutations by entomologists of the Agriculutral Research Service, USDA.

Mortality rates are shown by surviving insects or the ability of eggs and spores to hatch. Sterility is determined by the ability of the insects to reproduce. Genetic mutations may not appear in the first, or even second generation. Therefore, insects must be reared through several generations to find whether exposure to space affects their germ plasm.

Insects used in the July trials included the house fly, flea, honey bee, eastern tent caterpillar, wax moth, fruit fly (Drosophila), and yellow fever mosquito. Spores of the milky disease of Japanese beetles were also included. Containers of the insects and spores were carried inside and outside the balloon gondola.

All insects in the gondola lived through the flights and appear to be reproducing normally. Preliminary observations indicate no significant difference in the number of mutations between these insects and similarly packaged specimens left on the ground as controls.

All insects sent aloft on the outside of the gondolas died. This may have been due to temperature rather than radiation. The scientists are not sure, however, whether the low or high temperatures are lethal.

Temperatures at extreme altitudes are very low. But egg masses of the eastern tent caterpillar, for instance, overwinter in Northern Canada and are not usually affected by such temperatures. On the other hand, when the balloons reach altitudes above 95% of the atmosphere, solar energy is intense and high temperatures may be generated in the bodies of the insects subjected to this energy.

Spores of the causative agent of milky disease of Japanese beetle grubs sent on the July flights were exposed on the outside of the gondola. These spores can stand extremely low temperatures and are also very resistant to high temperatures. Dry spores can be held at temperatures above the boiling point of water for several days without injury. Spores sent aloft in July were tested for their ability to grow. It was found that of those exposed through a clear household wrapping material, only about one in 600 was able to reproduce. But of those exposed through thin aluminum foil, about one in six was capable of reproduction.

This would indicate that injury was caused by radiation or the heating effects of radiation. These exposed spores have not yet been tested for their disease-imparting effects on laboratory-reared beetle grubs.

$40 Million Fertilizer Plant Nears Completion At Korean Location

CHUNG-JU, KOREA — Construction of the $40-million fertilizer plant on the Han River here is now 80% complete. Situated about 70 miles south of the boundary guarded by UN troops, the plant represents the first major industrial project of the Republic of Korea.

When completed, the plant will produce 250 metric tons urea a day, enough for nearly one-third of the food-growing needs of Korea.

The plant is being financed largely with American aid through the International Cooperation Administration and is a joint engineering and construction venture of F. H. McGraw & Co. and Hydrocarbon Research, Inc. Major design and engineering work for the plant was done in the United States.

While construction work was at its peak, 120 Americans and nearly 1,200 Koreans were employed at the site. With the heavy phases of construction finished employment has declined and American engineering forces hope to put final touches on the project in the spring of 1959.

The plant, described as the largest of its kind in the Far East, will use a modern process system controlled by nearly 500 pneumatically operated instruments. Koreans are being trained in administrative and engineering jobs so that eventually the plant can be turned over to them for regular operation.

To New Post in Firm

NEW YORK—R. M. Richey has been named to fill the position of general superintendent of fertilizer production for The American Agricultural Chemical Co., D. S. Parham, vice president, has announced. Mr. Richey was formerly western division superintendent, and will now make his heaquarters in New York.

In his new position, Mr. Richey will direct all fertilizer production operations for the A.A.C. Co.

R. E. Lehmkuhl has been named to replace Mr. Richey as western division superintendent. He was formerly production superintendent for the Danville, Ill., and Seymour, Ind., Agrico plants. He will continue to headquarter in Danville.

CALIFORNIA MEETING

(Continued from page 1)

California Spray-Chemical Corp., Richmond, Cal., declared that an effective agricultural credit program must be based on sound management policy. The success of such a program depends upon how that policy is expressed and executed, he said.

Other speakers appearing on the program included W. L. Dixon, Jr., vice president and general manager of Pacific Guano Co., Berkeley, who made a plea for building incentives toward greater research effort in fertilizer technology and how to influence fertilizer manufacturers to adopt these new methods developed through research.

Wholesale trends in the fertilizer industry were discussed by Ralph S. Waltz, vice president and manager of the agricultural department of Wilson & George Meyer & Co., San Francisco. He pointed up the increasing trend toward sales being made directly from basic manufacturers to retail dealers, and added that future sales will be built around the framework of better services and new ideas.

Russell Coleman, executive vice president of the National Plant Food Institute, Washington, D.C., addressed the California group on their future prospects in a talk entitled "Your Future is in the Bag."

One of the highlights of the convention was a talk by Ronald Reagan, movie and television entertainer, who presented a thoughtful address on the serious side of the amusement world. He pointed out how business is recognizing the value of reaching the public through the vehicle of entertainment, and presented a strong case for the private enterprise system. Mr. Reagan warned against the wiles of creeping socialism which, he said, is attempting by every means possible to get its insidious message across. Private enterprise, the actor pointed out, has done more to improve the standard of living for the ordinary man than has any other system ever devised.

CFA NAMES OFFICERS

LOS ANGELES—Howard H. Hawkins, Golden State Plant Food Co., Glendora, Cal., was elected president of the California Fertilizer Assn. at the group's annual meeting in Los Angeles Nov. 9-11. Other officers named include: M. M. Stockman, the Mountain Copper Co., Ltd., San Francisco, vice president; Fred R. Bryant, Brown & Bryant, Shafter, treasurer; James F. Sloan, J. F. Sloan Co., Salinas, secretary; and Sidney H. Bierly, San Marino, general manager of the association. The CFA also reelected two members of the board of directors to three-year terms. They were Messrs. Hawkins and Stockman, president and vice president-elect. Mr. Sloan was elected to fill the unexpired term of Virgil A. Frizzell, no longer in the fertilizer industry. This term expires in November, 1959. Two new directors were named, also. They are L. R. Hamilton, California Spray-Chemical Corp., Richmond, Cal. and C. F. McFadden, Imperial NH_3 Service Co., El Centro, Cal. The new directors will serve three-year terms.

Program Plans Announced for December Entomological Society of America Meeting

SALT LAKE CITY—Program plans for the sixth annual meeting of the Entomological Society of America have been announced.

The convention, scheduled to take place at the Hotel Utah here, Dec. 1-4, will concern itself with topics such as "Relations of Insects to Plant Diseases," "Control, Extension and Regulatory Entomology" and "Chemical Control Investigations."

Other highlights of the four-day event will be an "Entomologists' Mixer" at the Salt Lake City Elks' Club, a photographic salon which will show photographs, slides and movies on pertinent subjects, and exhibits.

Under the control, extension and regulatory entomology section, a symposium will look at the topic "Promotion of the Safe Use of Pesticides in Cooperation with the Medical Professions and Public Health." J. E. Swift, University of California, will moderate. Giving the extension viewpoint will be Carl Frischknecht, Utah State University; R. W. Every, Oregon State University and J. N. Roney, University of Arizona. The medical viewpoint will be observed by Joseph H. Holmes, University of Colorado medical center. H. H. Schwardt, Cornell University, will handle the research viewpoint; Al Flebut, Niagara Chemical Division, will handle the industry viewpoint and Lee Merrill, Rutgers University, will speak from the publications viewpoint. Discussing correspondence, office and phone calls will be John J. Durkin, New Mexico College.

Included among the papers submitted to the section on Chemical Control Investigations are:

- Control of the McDaniel Mite, by Donald W. Davis, Utah State University, and Gerald L. Nielsen, New Mexico Department of Agriculture.
- Insecticidal Control of the San Jose Scale, by Edward W. Anthon, Washington State College.
- Four Years of Peach Spraying Experiments and Cage Tests for Plum Curculio Control, by Oliver I. Snapp, ARS, USDA, Ft. Valley, Ga.
- Studies on the control of the Walnut Husk Fly, by M. M. Barnes, J. C. Ortega and H. R. Moffitt, University of California.
- Seed Treatment as a Method of Insect Control, by W. H. Lange, University of California.
- Translocation of Chlorinated Hydrocarbon Insecticides in Soil, by J. K. Bready and J. V. Osmun, Purdue University.
- Translocation of DDT, Lindane and Aldrin from Treated Soils into Various Crops, by E. P. Lichtenstein, University of Wisconsin.
- The Effectiveness of Chlorinated Hydrocarbon Insecticides as Soil Treatments Against the Eye Gnat (Hippelates collusor) in the Laboratory, by Mir S. Mulla, University of California.
- A New Testing Method to Determine the Effectiveness of Residual Insecticides Against the German Cockroach, by Roger W. Meola and Dwight M. DeLong, Ohio State University.
- Toxicity of the Piperonyl Ester of Chrysanthemumic Acid and Some of Its Derivatives in Comparison with Allethrin and Pyrethrins as House Fly Sprays, by W. A. Gersdorff and P. G. Piquett, USDA, Beltsville, Md.
- Chemical Control of Silver-Top in Oregon, by G. W. Krantz, E. A. Dickason, and J. R. Hardison, Oregon State College.

A program of events for the ladies is also planned.

Harvesting Nears End Despite Delaying Rain

MEMPHIS—Although heavy rains during the middle of November slowed the harvest of cotton and soybeans, extension officials in Arkansas, Mississippi, Missouri, and Tennessee reported that about 90% of the two crops have been harvested. Rice harvest is about complete.

Despite the delaying of the harvest and possible damage to late cotton, most Mid-South farmers welcomed the moisture for winter cover crops and the preparation of land yet to be done for winter coverage.

Most of the corn crop has been gathered and excellent yields have been reported for most of the area. Livestock was reported in top condition because of excellent pastures this year.

California Weed Conference Discussion Topics Revealed

SACRAMENTO—Officials arranging the California Weed Conference at the Miramar Hotel in Santa Barbara Jan. 20-22, 1959, are making preparations for about 400 persons to attend.

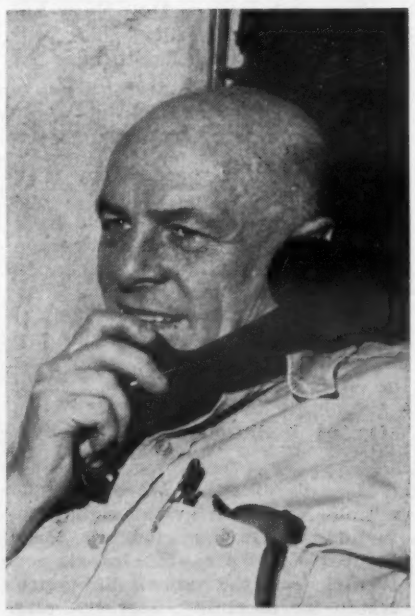
A feature of the program will be a question and answer session on "What's New in Chemical Weed Control?" Speakers will include representatives of chemical concerns.

Items for discussion will be weed control research and legislation; industrial and roadside weed control; weed control in row crops, and specific control of morning glory, Johnson grass and Russian knapweed.

Still another phase of the program will be concerned with weed control in nurseries and in turf grasses.

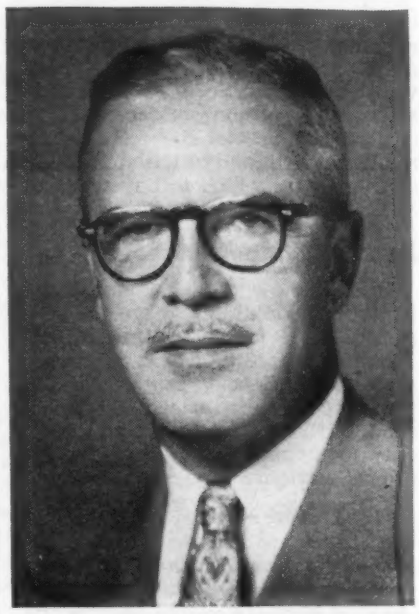
NINE MONTHS' SALES

CHICAGO—Total sales for the first nine months in 1958 amounted to $10,979,015 reported Alfred C. Stepan, president, the Stepan Chemical Co., Chicago. This compared with $10,897,715 for the similar 1957 period. Net profits after taxes for the nine months were $650,750 or $1.08 per share of capital stock outstanding. This compares with $640,478 or $1.07 for the same period last year.



E. A. Dumas

ELEMENTS NEEDED—Nitrogen, sulphur, and to a lesser extent, molybdenum, are elements likely to be needed by soils in the Palouse Country in the Pullman, Washington area. That's what E. A. Dumas, partner in Klemgard Distributors at Pullman, reports. Nitrogen is largely applied by injectors in the forms of anhydrous and aqua amonia. In some seasons the dry form, ammonium nitrate, is used. Sulphur is usually applied in the form of gypsum and is sometimes added to a complete liquid fertilizer. Fall wheat and peas are the principal crops in the area.



Carroll A. Clark

Carroll A. Clark Elected Head of MGK, Minneapolis

MINNEAPOLIS—Carroll A. Clark was elected president of McLaughlin Gormley King Co. here, at a meeting of the board of directors. Former president, George A. McLaughlin, was named chairman of the board.

Mr. Clark has been vice president and general manager of the company since 1947. He is also president of McLaughlin Farm Chemicals, Inc., a wholly owned subsidiary.

According to Mr. Clark, the sales and profits of McLaughlin Gormley King Co., for the year ended Sept. 30, were up substantially over 1957 and exceeded all recent years.

Public Hearing for Seed Law Amendment Set

WASHINGTON—A public hearing on proposed amendments to regulations under the Federal Seed Act will be held in St. Louis, Mo., Dec. 8 and 9, the U.S. Department of Agriculture has announced. The hearing will open at 10 a.m. in Room 426, Old Custom House, 815 Olive Street.

Written comments also will be considered if they are received by USDA on or before Jan. 10, 1959. They should be sent to the Seed Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture, Washington 25, D.C.

The proposed amendments will apply to Federal Seed Act amendments which went into effect Aug. 1, and clarify other regulations already in effect.

Soil Society to Meet

RALEIGH, N.C.—The second annual meeting of the Soil Science Society of North Carolina has been set for Jan. 27-28. This society, organized in Raleigh during October, 1957, has as its principal objective to increase and disseminate knowledge of North Carolina soils and their use. The January meetings will be held in Williams Hall, N.C. State College, Raleigh.

College personnel, agricultural workers throughout the state, representatives of fertilizer and lime industries, and others interested in soils are eligible for membership in the society.

The 1959 meetings will include special reports on new developments in fertilizers, tobacco and forest fertilization, soil extension programs, and chemical and physical problems with North Carolina soils.

SOUTH CAROLINA REPORT

CLEMSON, S.C.—Total fertilizer sales in South Carolina during October were 34,630 tons, reported B. D. Cloaninger, director, department of fertilizer inspection and analysis, Clemson Agricultural College. This was 6,428 tons more than that sold in October, 1957.

Research in the News

Pine sawflies in forests can be controlled with an aerial spray of one lb. actual DDT in oil to the acre, according to tests conducted in Arkansas.

Application must be properly timed, cautions Dr. Lloyd Warren, associate entomologist with the Arkansas agricultural experiment station, and J. F. Coyne, entomologist with the USDA southern forest experiment station. These two agencies conducted the tests.

A spray program should begin within two weeks after egg hatching starts so the spray will be deposited when larvae are young and vulnerable. Hatching occurs between the last of February and the first of April, the entomologists reported in Bulletin 602.

The pine sawfly is a pest of loblolly and shorleaf pine in Arkansas. Loblolly is the preferred host. Natural control factors such as weather, parasites, and diseases usually check infestations, but this may not occur until spectacular damage has been done.

Although attacked trees may suffer loss of growth, the researchers concluded that chemical control usually does not pay unless extremely heavy defoliation continues year after year in the same stand of timber.

Heaviest pine sawfly infestations have occurred in south central Arkansas. Feeding of larvae (young insects) accounts for the damage caused by this pest. Depending on the size of the trees and number of larvae present, partial to complete defoliation may occur. Both large and sapling trees are attacked. Defoliation results in loss of growth, particularly if the tree is subject to successive annual attacks, Warren and Coyne remarked.

You can get more information about the activity of this insect from Bulletin 602, "The Pine Sawfly in Arkansas." Single copies are available free from agricultural extension offices in Arkansas, or from the bulletin room, agricultural experiment station, University of Arkansas, Fayetteville.

●

Certain systemic fungicides, or materials which are taken up by the plant when applied to the foliage or soil, are showing promise against cherry leaf spot and apple scab, according to Cornell plant disease specialists at the experiment station at Geneva, N.Y.

A brief review of findings in station greenhouse and orchard tests appears in the current issue of the station's quarterly, "Farm Research."

"Control of cherry leaf spot with systemics has been achieved in greenhouse tests with Montmorency trees receiving foliar spray treatments," comment the scientists.

Various derivatives of an antibiotiv known as actidione were sprayed on the foliage, absorbed by the leaves, and translocated to new growth which they then protected against infection by the leaf spot fungus, explain the station workers.

One of the derivatives when applied to the soil was taken up by greenhouse cherry trees and provided protection against the leaf spot fungus with which the trees were inoculated within three days after the soil treatments.

At present the systemic control of cherry leaf spot with foliar applications is believed to be of more immediate aid to nurserymen, but possible effective use in bearing orchards is being investigated.

Both orchard and greenhouse tests have been made for apple scab control with salts of a chemical known as dodecylguanidine, one of which has received the trade name of Cyprex. The action is described as "local" because it is largely due to leaf absorption and penetration rather than translocation from leaf to leaf.

The uptake of the chemical by the leaves is exceedingly rapid, say the station plant disease men. Leaves sprayed with the material on the under surface and then washed 15 minutes later before the spray had dried absorbed enough of the chemical to protect the unsprayed upper surface of the leaves against the scab organism.

Repeated effective control of apple scab in the orchard tests each year has been attributed to the combined effect of protective, eradicative, and local systemic activity of the fungicides.

●

A new variety of blackberry was introduced and named at the 40th annual meeting of the New York State Fruit Testing Assn. held at Geneva recently.

The new berry is to be known as the "Darrow" in honor of Dr. George M. Darrow, who, prior to his retirement in 1956, was in charge of the small fruit breeding program of the U.S. Department of Agriculture. Dr. Darrow was present when the new blackberry was named.

Describing the new introduction, Prof. George L. Slate, Cornell small fruit breeder at the experiment station at Geneva, stated that Darrow originated from a cross made in 1940 between a seedling known as N. Y. No. 15826 and a station introduction of 1950 named Hedrick. Both parents came from a cross between Eldorado and Brewer, old-time commercial varieties.

The seedling which was later to be named Darrow was selected in 1946 because of its outstanding characteristics. It began fruiting as a selection in 1950. Small lots of plants have been distributed by the Fruit Testing Assn. as N. Y. 24338 since the fall of 1956.

"In 1950, when Darrow first fruited as a selection, it was noted as 'promising' and 'one of the best selections'," comments Prof. Slate. "It has been outstanding and the best blackberry in the station plantings every year since then."

Darrow is notable for its vigor, regular and heavy production, firmness, and general good quality. The berries are large, measuring 1 in. in length and ¾ in. wide. They begin ripening in late July, with Eldorado, and continue over a long period. In fact, fresh fruit was available at the time of the association meeting on Sept. 18.

The plants of Darrow appear hardier than those of most blackberry selections and varieties growing at the experiment station and bore much heavier crowns in 1957 and 1958 than other sorts which suffered winter injury.

Plants of the Darrow are now available from the Fruit Testing Assn. which propagates and distributes new introductions developed in the experiment station's extensive fruit breeding program.

●

Alfalfa yields of four tons of quality hay, or its equivalent in pasture or silage, can be successfully produced on most farms, if adequate fertilization and other good cultural practices are used, C. M. Christy, University of Missouri extension soils specialist, reports.

Soil tests are a good starting place for establishing an alfalfa stand, says Mr. Christy, in a statement summarized by the Midwest division of the National Plant Food Institute.

These tests, he says, can help reveal nutrient deficiencies in the soil and set the stage for adequate mineral treatments well distributed through the soil.

In most instances, he reports, liberal use of lime and nitrogen-phosphate-potash fertilizer is needed in quickly establishing a vigorous producing stand.

"It's one thing to establish an alfalfa stand but it's quite another to hold the stand at top production over an extended period of years," he says.

"A four-ton alfalfa yield removes as much as 48 lb. of available phosphate, 180 lb. of available potash and calcium equivalent to one-fourth ton of pure calcite limestone."

Mr. Christy says that where the alfalfa stand was established with processed phosphate as part of the original fertilizer treatment, an annual top-dressing of 600 lb. per acre of 0-20-20 fertilizer or its equivalent can help keep production high.

Adding 25 to 30 lb. of borax annually is good insurance against Boron deficiency, he says. This is available already mixed with the phosphate-potash fertilizer.

"An annual top-dressing of plant nutrients," says Mr. Christy, "will protect the investment in an established alfalfa stand and will provide a bonus in the crop yielded as well."

"Could Be Useful," Says Scientist

Gibberellic Trims Peach "Rest" Period in North Carolina Tests

By DAVID R. WALKER and CLIVE W. DONOHO, Jr.*

Gibberellic acid, produced from the fungus Gibberella fujikuroi, has profound growth regulating properties when applied to many plants. The multitude of effects which have been reported led us to investigate gibberellic acid as a chemical activator for breaking the "rest" period of the peach.

This rest period is a state of dormancy during which a plant fails to grow even though environmental conditions are favorable. A period of chilling is necessary to "break" or overcome the rest period in peaches. Elberta peaches require 950 hours of temperature below 45° F.

Young Elberta peach trees that had been exposed to only 164 hours of temperature below 45° were used in our first tests. These were transplanted from the orchard to large cans and placed in the greenhouse for treatment.

Buds from trees receiving 1,000 and 4,000 ppm (parts per million) gibberellic acid sprays leafed out within 2 weeks after application. Those receiving smaller amounts did not leaf out after treatment.

In another test, trees had been exposed to 433 hours of temperature below 45°. That's nearly half what normally is needed to break the rest period. They were sprayed with 0, 100 or 200 ppm gibberellic acid. Trees sprayed with the 200 ppm concentration leafed out earlier than those getting the 100 ppm strength. Untreated trees did not leaf out at all.

Note that trees exposed to more hours of chilling temperatures responded to lower concentrations of gibberellic acid.

Gibberellic acid apparently overcomes the effect of a growth inhibitor to stimulate the metabolic processes ahead of the usual time in young Elberta peach trees. Thus, gibberellic acid "replaced" part of the cold requirement of the peach trees in these tests.

If mature trees react similarly to those in tests, without harmful effects to other plant processes, it would mean that southern peach growers would be able to grow varieties that require a longer chilling period. Also, gibberellic acid might make it possible to grow peaches much further south.

More work is needed, however, to determine the effects of gibberellic acid on the biochemical processes in plants and to understand how they affect the rest period in peaches.

*(EDITOR'S NOTE: The accompanying article is a reprint of an article which appeared in the Autumn issue of "Research and Farming," published by the North Carolina Agricultural Experiment Station.)

ACCIDENT-FREE PERIOD — The Albert Lea, Minn., plant of the Smith-Douglass Co., Norfolk, Va., observed a record of 1,000 days—almost three years—without a lost time accident. Harvey Botten, Albert Lea safety committee chairman, commented that this was an unusually good record for that area. Above, Mel Mawhinney, plant manager, Mr. Botten, R. H. McNeese, plant safety committee chairman, and R. D. Ausen, plant superintendent, examine the accident scoreboard posted in the plant. Gaither Newnam, Smith-Douglass safety director, announced that the Albert Lea plant has suffered only two lost time accidents in ten years.

Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Northeastern states.

SAFETY AND GOOD SENSE . . .

Reasonable Approach Rather Than Hysteria Marks Recent Ammonium Nitrate Hearing

A SOUND approach to a situation was made in the recent special hearing in Baltimore to determine what special restrictions, if any, should be placed on the handling and storage of ammonium nitrate in the city. (Croplife, Nov. 17, page 1.) The absence of hysteria and the objective appraisal of ammonium nitrate were commendable. Despite strong opinions in favor of tighter restrictions on the part of some city officials and representatives of labor, the hearing proceeded to keep the matter well within perspective. Industry, shippers and railroad representatives presented authentic figures and facts to convince the hearing group that ammonium nitrate is not a dangerous explosive under usual conditions.

The new ordinance, which in effect rewrites the nitrate section of the Baltimore city code, would demand no permits for handling of ammonium nitrate-carbonate mixtures up to 60% AN; ammonium nitrate-calcium nitrate mixture, 50% each; ammonium nitrate-sulfate mixtures, up to 40% AN and 60% sulfate; and ammonium nitrate-phosphate fertilizers up to 60% AN. Ammonium nitrate itself will require a special permit for loading and unloading. This, of course, is not unexpected.

Of considerable significance, in view of frequently-voiced fears in the industry about the possibility of ammonium nitrate being classified as an "explosive," was the fact that no such label was placed on the material. Representatives of labor had put considerable pressure on the hearing to have the term "explosive" used so they could collect extra pay for handling material so classified.

Fertilizer-grade ammonium nitrate, coated with inorganic material, is not at all dangerous. In order for the fertilizer to react violently, it must be mixed with organic material. The Baltimore hearing took these facts into consideration and arrived at a reasonable conclusion.

At the present, so far as we know, Baltimore is the only major city giving consideration to a new set of rules governing ammonium nitrate.

However, it should not be forgotten that the American Association of Port Authorities recently called on the U.S. Coast Guard to clarify its regulations governing ammonium nitrate shipments through seaports. The hazardous cargo committee of the port authority association also asked the Coast Guard to stipulate maximum percentages of the compound permitted in fertilizer mixtures.

Important as is escape from crippling ordinances and higher shipping costs, there are other points to be considered. There should certainly not be any farmer resistance to purchasing and storing ammonium nitrate. Actually, the facts are that as far back as anyone can remember, no damage, no injury, and certainly no death has resulted on the farm from any explosion of ammonium nitrate.

Other cities, perhaps jittery over alleged hazards of ammonium nitrate being handled and stored, may now take a cue from Baltimore and should decide that if this Maryland metropolis considers the fertilizer not an unusually dangerous commodity, then an important precedent is set.

Baltimore, possibly more than most seaports, has an unusually close-in waterfront which brings freight-laden vessels within only a few yards of the main downtown area. Thus, if a critical study of ammonium nitrate hazards here results in a "liberal but firm set of laws," then other cities should not become too exercised over the situation.

Ammonium nitrate firms shipping in and out of Baltimore have expressed satisfaction at the reasonable attitude shown by the group hearing testimony. The results should not hamper the trade to any appreciable extent.

The cut below, picturing Baltimore's downtown waterfront, illustrates the situation in that port and emphasizes the fact that authorities want to be sure that no mishap will endanger the city. Calling ammonium nitrate a "dangerous material" as they did is a long way from terming it an "explosive."

BALTIMORE WATERFRONT—Ship being spotted in Port of Baltimore, shows proximity of downtown buildings to freighters in the harbor. Ammonium nitrate hearing in Baltimore ends in "firm" laws, but special study group fails to term the fertilizer an "explosive." Baltimore is one of the larger ports of the U.S., accounting for 45,823,878 tons of shipping in the calendar year 1955.

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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is $5 for one year ($8 a year outside the U.S.). Single copy price, 25¢.

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MEETING MEMOS

Jan. 27-28—Soil Science Society of North Carolina, Williams Hall, North Carolina State College, Raleigh.

Feb. 10-12 — Agricultural Chemicals Conference, sixth annual meeting, Texas Technological College, Lubbock, Texas.

Meeting Memos listed above are being listed in this department this week for the first time.

Nov. 25—Eighth Semi-Annual Meeting and Winter Conference, Manufacturing Chemists' Assn., Hotel Statler, New York.

Dec. 1-4—Entomological Society of America, Annual Meeting, Hotel Utah, Salt Lake City.

Dec. 2-3—Far West Regional Accident Prevention School, Fresno, Cal.

Dec. 3-4—North Central Weed Control Conference, Netherland Hilton Hotel, Cincinnati.

Dec. 3-4—Annual Soil Fertility and Plant Nutrition Short Course, University of Missouri, College of Agriculture, Columbia, Mo.

Dec. 3-4—Alabama Soil Fertility Society, Annual Meeting, Whitley Hotel, Montgomery, Ala., Charles W. Summerour, P.O. Box 120, Montgomery, Ala., Secretary-Treasurer.

Dec. 3-5—Agricultural Ammonia Institute, Annual Meeting, Morrison Hotel, Chicago, Jack F. Criswell, Claridge Hotel, Memphis, Executive Vice President.

Dec. 4-5 — Southeastern Conference on Mineral Nutrition of Forest Trees, Duke University, Durham, N.C.

Dec. 8—Annual Soils and Fertilizer Short Course, Coffey Hall, University of Minnesota Institute of Agriculture, St. Paul.

Dec. 8-10—Chemical Specialties Manufacturers Assn., Annual Meeting, Commodore Hotel, New York.

Dec. 17-18—Beltwide Cotton Production Conference, Rice Hotel, Houston, Texas, sponsored by the National Cotton Council.

1959

Jan. 7-8 — Fertilizer Short Course, Iowa State College, Ames.

Jan. 7-8—Fifth Annual Insect Control Conference, Mississippi State University, State College, Miss.

Jan. 7-9—Thirteenth Annual Northeastern Weed Control Conference, Hotel New Yorker, New York.

Jan. 12-13—Ohio Pesticide Institute, annual winter meeting, Neil House, Columbus, Ohio. J. D. Wilson, Secretary, Agricultural Experiment Station, Wooster, Ohio.

Jan. 20-22—California Weed Conference, Miramar Hotel, Santa Barbara, Cal.

Jan. 21-22—Northwest Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore.; George Kitzmiller, Pacific Cooperatives, Portland, conference chairman.

Jan. 21-23—Western Cooperative Spray Project, Benson and Imperial Hotels, Portland, Ore.

Jan. 22-24 — Agricultural Aircraft Assn., Senator Hotel, Sacramento, Cal.; Wanda Branstetter, Chandler Field, Fresno, Cal., Executive Secretary.

Jan. 27-28—Nematology Workshop, Portland, Ore., sponsored by Shell Chemical Corp.

Jan. 28-29 — Illinois Custom Spray Operators' Training School, 11th annual meeting, University of Illinois, Urbana.

Jan. 29—South Dakota Fertilizer Dealer Short Course, South Dakota State College, Brookings, S.D.

Jan. 29-30—Colorado Agricultural Chemicals Assn., Cosmopolitan Hotel, Denver. D. E. Garrison, Box 623, Greeley, Colo., secretary.

Feb. 12-13—Midwestern Agronomists-Fertilizer Industry Representatives, 11th annual meeting, Edgewater Beach Hotel, Chicago, Ill., sponsored by National Plant Food Institute.

Feb. 24-25—Alabama Pest Control Conference, Alabama Polytechnic Institute, W. G. Eden, Secretary-Treasurer, Alabama Association for Control of Economic Pests, Alabama Polytechnic Institute, Auburn, Ala.

June 9-10—Seventeenth Annual Convention of the Association of Southern Feed and Fertilizer Control Officials, Velda Rose Motel, Hot Springs, Ark.; Bruce Poundstone, University of Kentucky, Lexington, Ky., secretary-treasurer.

July 7-9 — Pacific Northwest Plant Food Assn., 10th Annual Regional Fertilizer Conerence, Tacoma, Wash.

Promotion Announced

PENSACOLA, FLA. — Albert E. New, veteran research and production management specialist, has been named vice president and director of production for Escambia Chemical Corp., according to an announcement by Robert U. Haslinger, president of the corporation. Mr. New, who has been active in chemical research and production management since 1941, joined Escambia Chemical in 1956. He will continue to operate from offices in the company's plant near Milton.

CALENDAR FOR 1958-59

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Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15c per word; minimum charge $2.25. Situations wanted, 10c a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20c per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Advertisements of new machinery, products and services accepted for insertion at minimum rate of $10 per column inch.

All Want Ads cash with order.

HELP WANTED

OPPORTUNITY FOR GOOD, LIVE, YOUNG to middle aged man—experienced in selling garden supplies—such as peat moss, field and garden seeds, commercial fertilizers, insecticides, herbicides, etc.—to nurserymen. To travel states of Texas, Oklahoma, Louisiana and New Mexico. Must have own car. Write—giving references as to character, sales ability, etc., to E. C. Heid, President, Heid Bros. Corp., P. O. Box 98, El Paso, Texas.

SALES REPRESENTATIVE for nitrogen producer. Excellent opportunity. Agricultural or chemical education. Location Missouri. Three to five years' experience selling to fertilizer manufacturers. Salary based on experience. Address Ad No. 4285, Croplife, Minneapolis 40, Minn.

MISCELLANEOUS

KILL BRUSH at low cost with amazing R-H Brush Rhap. Will not injure grasses, grains, cattle, or other animals. See your dealer, or write Reasor-Hill Corporation, Box 36CL, Jacksonville, Ark.

BRUSH AND WEED KILLER

KILL SUBMERSED water weeds which foul up motor propellers, tangle fishing gear and choke irrigation ditches with R-H Granular Weed Rhap. Inexpensive, easy to use, sure results. For details write Reasor-Hill Corporation, Box 36CL, Jacksonville, Ark.

BUSINESS OPPORTUNITIES

MANUFACTURER'S REPRESENTATIVE wanted to handle a line of agricultural products on a commission basis. Exclusive territories granted. Roberts Chemicals, Inc., Nitro, W. Va.

Four-Barreled Program Set for Chicago Meeting

A four-barreled program is scheduled for the 11th annual joint meeting of the Midwestern Agronomists and the Fertilizer Industry Representatives at the Edgewater Beach Hotel, Chicago, Feb. 12-13.

Sponsored by the National Plant Food Institute, the program will consist of:

(1) Fertilizer research reports by specialists from five Midwestern agricultural colleges.

(2) A study of the fertilizer sales potential in the Middle West.

(3) A summary of experience with NPFI crop production potential programs in Illinois, Wisconsin, Minnesota and Kansas.

(4) Reports by Midwest district representatives of NPFI educational program highlights in their states.

Co-chairmen of the event will be Dr. W. P. Martin, University of Minnesota, and Dr. George E. Smith, University of Missouri.

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CHASE BAGS
There's None Better!

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Mississippi River Chem. Corp. .....
Monsanto Chemical Co. .....

National Distillers & Chemical Corp. ....
National Potash Co. .....
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Beginning January 19, 1959

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New, added circulation at no added cost!

New, deeper penetration in your prime market!

Circulated exclusively to production and management!

Edited exclusively for production and management!

Here's an up-to-date, authoritative source on problems of liquid and dry formulation of pesticides, fertilizer mixing, carriers, equipment and maintenance, bagging and packaging, storage, safety, materials handling—and many more items that are the prime concern of your prospects! Here are "case history" articles, trade news, patent and trademark information.

It's the new *Fertilizer-Pesticide Production Edition* of Croplife . . . published every 4th week beginning January 19, 1959 . . . aimed directly at production men and plant managers . . . giving you a fully validated, named circulation of approximately 8,500 top prospects in the fast-growing agricultural chemical field. Now . . . while you're looking for ways to make '59 a bigger, better year for you, reserve your space in Croplife's Jan. 19 *Fertilizer-Pesticide Production Edition*. Plan a year-long program in Croplife to reach the complete buying team—production men and plant managers—of the booming fertilizer-pesticide field. Write, wire or call your nearest representative!

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